Stuff ISSUE 64 SEPTEMBER 2015
The world's best-selling gadget magazine
www.stuff.tv

SNAP AMAZING PHOTOS WITH ANYTHING

stuff

GADGETS / APPS / GEAR

SINGAPORE

WWW.STUFF.TV

PREPARE TO PLAY
THE HOTTEST GAMES IN THE YEAR AHEAD

EVOLUTION OF THE LAPTOP
FROM PAST TO PRESENT AND BEYOND

SUPERPHONE SHOOTOUT

WHICH IS OUR TOP ANDROID SMARTPHONE OF 2015?

SAMSUNG GALAXY S6 VS LG G4
VS HTC ONE M9 VS HUAWEI P8

haymarket
9 772010 070052
Issue 64 SEPTEMBER 2015 $7.50

PROLiNK®

www.prolink2u.com

Your Inspirations. Our Innovations.

Live View

LiteView

IP CAMERAS THAT MAKE HOME / OFFICE SURVEILLANCE A BREEZE

STANDARD FEATURES:

- Easy True Plug & Play usage – takes less than 3 minutes to set up / no technical knowledge required.
- True Peer to Peer Direct Streaming – No relay server and no authentication data is stored in the server (**This means your data remains secure).
- Free Android / iOS mobile applications and Professional 36 channels Video Management Software for live monitoring and archiving (*PIC2001WE comes with a 16-channel VMS).
- High Definition 720p (1280 x 720) visuals with the latest H.264 technology (**PIC1003WP supports VGA resolution).
- Allows recording directly to MicroSD card (up to 64GB), Dropbox, NAS storage, PC or your mobile device (*PIC2001WE only records to MicroSD – up to 128GB).

PIC1008WN, PIC1007WP AND PIC1006WN-HD

- Multiple detection technologies - Motion detection, PIR sensor , Audio and Temperature sensors for accurate notifications / alerts only when it matters.
- Dual Lens with a sensor for Day / Night mode depending on the illumination level. No IR Cut Filter is required which reduces the risk of mechanical failure.

PROLINK TRUE PLUG & PLAY IP CAMERAS

PIC1007WP
Megapixel Wireless IP Camera with Pan/ Tilt and Dual Lens.

PIC1008WN
Outdoor Megapixel Wireless IP Camera with Dual Lens (NEW!).

PIC1006WN-HD
Megapixel Wireless IP Camera with Dual Lens.

PIC1003WP**
Wireless IP Camera with Pan / Tilt.

PIC2001WE*
Megapixel Wireless IP Camera with 300Mbps Wi-Fi Extender.

Manufactured by **Fida International (S) Pte Ltd.** Email: **sales@fida.com** Tel: **+65 6357 0668**
Service Center: **Block 16 Kallang Place, #06-02, Singapore 339156** Technical Support: **+65 6357 0666**
Distributed by **AceCom Technologies** Hotline: **+65 6228 2590 / 9746 2748**
Sales Enquiries: **menghong@acecom.com.sg**

PROLINK® is a trademark of Fida International (S) Pte Ltd and is manufactured under its authority. Microsoft®, Windows® and Windows® 7 are trademarks of the Microsoft® group of companies. Intel®, Intel® logo, Intel® Atom Inside are trademarks of Intel® Corporation in the U.S and other countries. Other trademarks, registered trademarks, and/or service marks, indicated or otherwise, are the property of their respective owners. Price, promotions, design and specifications, if any, are subject to change without prior notice. Images shown are for illustrative purposes only. © Copyright 2015. **PROLINK® All rights reserved.**

FACEBOOK TWITTER YOUTUBE WEBSITE

WELCOME

Just like the gadgets we love, this issue of Stuff magazine is filled with features to make your life both better and easier. If you don't want that, you a) should be reading another tech magazine instead, b) should first read this magazine anyway in case you change your mind, and c) keep buying our magazine because we're pretty sure you'll come round to our way of thinking. To kick us off we've got a comprehensive guide to **Better Photography** (p29) that'll teach you to take amazing photos with just about anything from smartphones to full-fledged DSLRs. Then take a journey through tech time with the ghosts of laptops past, present, and future to follow the **Evolution of the Laptop** (p46), and learn all about the portable PC that's become essential to how we both work and play. You won't just load up on useful trivia, you'll also learn more about how to choose the laptop that's right for you. Next, find out for sure what the best Android smartphone of 2015 is right now in our Android Smartphone Supertest on p88, which should put you in good standing if your mobile plan is up for renewal and you're not an Apple fan. You'll also need **Twelve extra lives** (p98) to get you through the next 12 months, because we've rounded up an absolutely stellar list of the games you need to look out for in the year ahead, so save both your time and money for those.

Melvin Tang, Editor / melvin.tang@haymarket.com / @melvinstuff

www.stuff.tv facebook.com/stuffsingapore twitter.com/Stuff_SG instagram.com/stuffsingapore

Stuff

Haymarket Media Asia Pte. Ltd.
21 Media Circle
#05-05 Infinite Studios
Singapore 138562
www.stuff.tv
Email: stuff.sg@haymarket.com
Tel: +65 6224 6101
Fax: +65 6224 6102

To email one of the Stuff team listed below please use firstname.lastname@haymarket.com

EDITORIAL
Editor Melvin Tang
Online Editor Asia Tein Hee Seow
Features Writer Elissa Loi
Contributor Daryl Lee
Designer Shahrul Azmi
Content Director UK Hugh Sleight
Editor-in-Chief Will Findlater

PUBLISHING
Brand Director Asia Andy Jackson
Marketing Executive Amanda Cheok
Brand Director UK Alastair Lewis
Digital Publisher UK Sandip Ray
Head of Licensing Asia Lisa Vernall

COMMERCIAL
Business Development Manager- Asia Raj Parekh
Digital Sales Manager Charlie Moss

MANAGEMENT
Managing Director Asia Tim Waldron
Finance Director Asia David Newton
Managing Director UK David Prasher
Chief Executive Kevin Costello

STUFF ASIA EDITORS
China Zeng Chun
India Nishant Padhiar
Indonesia Riza Anwar
Korea Ho-Seok Ko
Myanmar Ye Myanmar Aung
Philippines Ira V. Panganiban
Taiwan George Wang
Thailand Suwee Deetae
Vietnam Le Kim Thach

Stuff Singapore MCI (P) 053/11/2014 is published by Haymarket Media Asia Pte. Ltd. a subsidiary of Haymarket Media Group Ltd.

Stuff is published across Asia in; China, India, Indonesia, Korea, Malaysia, Myanmar, Philippines, Singapore, Taiwan, Thailand and Vietnam.
©Haymarket Media Asia Pte. Ltd. 2013. All rights reserved.

Printed by Times Printers Pte. Ltd.
Distributed by MediaCorp Pte Ltd.

This publication may not be reproduced or transmitted in any form in whole or in part without the written permission of the publishers. Liability: while every care has been taken in the preparation of this magazine, the publishers cannot be held responsible for the accuracy of the information herein, or any consequences arising from it. In the case of all product reviews, judgements have been made in the context of the product tested based on Singapore prices at the time of review, which are subject to fluctuation and only applicable to the Singapore market.

haymarket

SEIKO

DEDICATED TO PERFECTION

Distributor: THONG SIA CO (S) PTE LTD
50 Kallang Avenue #06-03, Singapore 339505. Tel: 6737 6122 Website: www.thongsia.com.sg SEIKO SINGAPORE

Available at:
SEIKO BOUTIQUES 1 Harbourfront Walk #01-03 Vivo City, Singapore 098585. Tel: 6376 8081
50 Jurong Gateway Road #01-29 JEM, Singapore 608549. Tel: 6339 4539 CITY CHAIN and authorised dealers

Insist on SEIKO's International Warranty (521)

CONTENTS

ON THE COVER

p98 Game on

HOT STUFF

8 **The Hot Five**
- ***Fallout 4***
- **Volkswagen GTE**
- **GoPro Hero 4 Session**
- **Leica Q**
- **Oculus Touch**

16 **Vital stats Lily**
Your new hovering camera drone companion

18 **Geek on the road Electric roadtrip**
I would drive 1600km... in a Tesla Model S

19 **Apple Music**
Does it knock spots off Spotify?

20 **Vital stats Windows 10**
Why it's this season's hottest install

24 **Apps**
There's always a reason to app-cessorise

78 **Games**
Pay to play in a good way

p70 Top of the 'bots

p52 Lighter than air

TESTS

26 **Approved *Stuff*-approved apps for...**
Space exploration and thought control

52 **First test the new MacBook**
Apple has reinvented the latop; we've tested it

70 **Supertest Android smartphones**
Samsung Galaxy S6, LG G4, HTC One M9 or Huawei P8: which is the top phone of 2015?

98 **Tested Games**
- *TheWitcher 3: Wild Hunt*
- *Batman: Arkham Knight*
- *Project CARS*
- *Kerbal Space Program*
- *The Elder Scrolls Online: Tamriel Unlimited*

INTRODUCING

UP3™

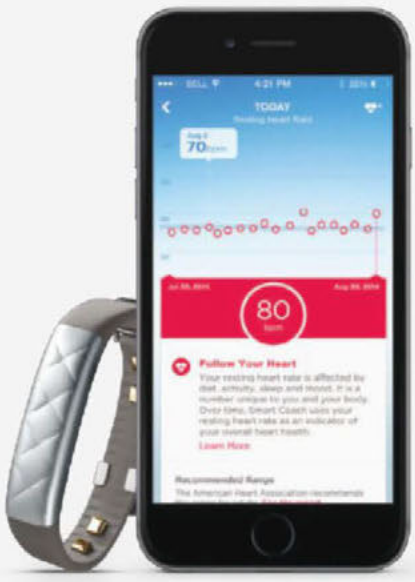
by JAWBONE®

AVAILABLE IN STORES NOW

THE WORLD'S MOST ADVANCED TRACKER.

Everyone has had a life-changing experience sometime. This is one of those times. UP3™ is simply the most advanced tracker you can buy. Its classic, durable design will stand the test of time. Multi-sensor technology adds breadth and accuracy to Smart Coach. Everything about UP3 says that the bar has been set higher. Wear one and go further.

Heart Health • Wirelessly syncs • Splash-proof • Up to 7 days battery life



ACTIVITY TRACKING
Track steps, distance and calories burned. UP3 learns how you move, capturing all your activities like running, soccer and swimming.

ADVANCED SLEEP
UP3 uses advanced sensors to track your true sleep stages—REM, Light, and Deep.

FOOD & DRINK LOGGING
With the UP® App, you can easily track food, drink, calories, nutrients and more.

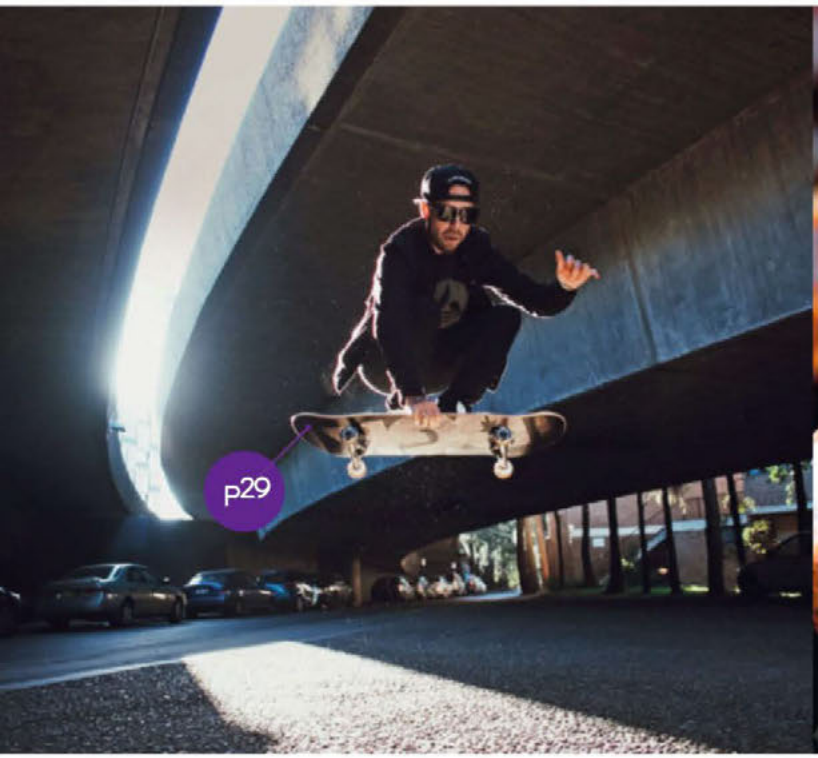
SMART COACH
Your intelligent guide—delivering the motivation and personalized insights you need to reach your goals.

HEART HEALTH MONITORING
Advanced sensors track your heart rate and use that information as a baseline for improving your health.

UP GET THE APP Bluetooth®

JAWBONE, UP, and UP3 are trademarks of AliphCom dba Jawbone.
All other marks are property of their respective owners.

09.15



FEATURES

29 **Better photography**
Whether you're a dedicated DSLR demon, a compact camera kid or just a sassy smartphone snapper, these expert tips will improve all your photos

46 **The evolution of the laptop**
We consult with the ghosts of laptops past, present, and future to see how far they've come, and where they'll be going

67 **Finding new music**
There's too much of the stuff, most of it's bloody terrible, and it's all over the internet; *Stuff* investigates how tech is trying to help you sniff out your next favourite band

98 **Cover feature** **Twelve extra lives**
With *Star Wars: Battlefront*, *No Man's Sky*, *Fallout 4* and many more on their way, it's going to be a stellar 12 months for gamers – here are the top dozen titles to look out for

130 **Next big thing?** **Drone tourism**
Fly first class over Angkor Wat or the Panama Canal – no baggage required

PROJECTS

120 **Beta yourself** **Barbecuing**
Turn your charred burgers and questionable sausages into outdoor grilling heaven

122 **Playlist** **T-shirt stores**
Click yourself stylish

124 **Playlist** **YouTube channels**
Click yourself amused

126 **Playlist** **Vimeo short films**
All the best viewing from YouTube's more mature and attractive cousin

128 **5-minute hacks** **If nothing else, at least...**
● Remote-control your PS4 ● Democratise your playlist ● Go on a smartphone diet ● Relive your childhood for retro games ● Play app hangman ● Go on a drone-guided tour

HOTST

IT'S GOING TO BE HUGE

The new *Fallout* promises to take up months of your spare time with a post-apocalyptic Boston (USA, not Lincolnshire) to explore, and vast expanses of wasteland in which you'll be eaten, repeatedly, by Deathclaws.

IT'LL TEST YOUR METAL

Given how sumptuously realised New Vegas was way back in 2010, we're expecting jaw-drop injuries from a colourful Eastern seaboard adventure; better warm up your Xbox One/PS4/PC.

U F F

23 PAGES OF THE BIGGEST STORIES FROM PLANET TECH

IT'S GOT A DOG IN IT

Of course it's got a dog in it. *Metal Gear Solid* has one, *Call Of Duty* has one, and *Fallout 3* had DogMeat. No self-respecting console blockbuster would let you go into battle without an Alsatian to back you up.

HOT FIVE #1

WE'RE READY TO FALL IN LOVE AGAIN

Fallout 4

In June 2015, just for a few minutes, the world dimmed. It wasn't a glitch in the power supply or ghosts in the machine; it was a significant portion of the geek population stopping whatever they were doing and watching the new *Fallout 4* trailer. Food fell unwrapped from the end of production lines, deals were left hanging in the Stock Exchange, sheep stood half-shorn. And why? Because it's been five years since the last game in the series, *Fallout: New Vegas*. Five long years since we took time off work just to squeeze as much as possible of Bethesda Studios' apocalyptic open-worlder into our minds. We still don't know a great deal about *Fallout 4*, but we know more than we did. And we know that there's going to be another planetary slowdown soon: the week that it comes out, none of us are doing any work.

As hot as... YouTube's servers
Xbox One, PS4, PC / fallout4.com

1 What are you steering at?

Stacked transparent displays show important information about speed and range, while the Batmobile-style wheel is surely going to require both hands... so that sausage roll will have to wait until you're safely home.

2 Buckets of carbon

There's going to be a price hike on sheets of carbon fibre the month they put this Golf into production – it's almost entirely made from the stuff. Even inside, where you and your bae are forcibly desmooched by being sat in separate tubs.

HOT FIVE #2

FUN BEGINS AT FORTY

Volkswagen Golf GTE Sport

With next year marking the Golf GTI's 40th anniversary, VW's designers have been given carte blanche. And look what they've come up with! The plug-in hybrid GTE Sport combines the 1.6-litre turbo engine from its championship-winning Polo World Rally car with two electric motors. The result is roughly 400bhp, driven through all four wheels via a DSG gearbox, until you hit 100kph after just 4.3 seconds. And if that sentence wasn't muti-layered enough for you, wait until you see the interior of the GTE Sport – an event that's going to have to wait until you've played with the gull-wing doors for at least ten minutes.

As hot as... its claimed 60km/l efficiency
$tba (concept) / volkswagen.com.sg

HOT FIVE #3

LI'L 'TUBE CUBE

GOPRO HERO 4 SESSION

Oh, what a tussle. One board member had to be removed from the meeting after insisting that 50% smaller and 40% lighter was fine, so long as the camera could remain *the same size*. Finally, once everyone else had got their head around it, this new GoPro form factor was signed off. The Session's advantages go beyond simply being smaller than other GoPros: it's waterproof without a case, which is convenient and has a positive effect on audio quality. Yes, it is still compatible with the bazillions of GoPro mount accessories, but there's also a new low-profile mounting option. The battery is not removable and it lacks the 4K recording of the flagship Hero 4 Black, but a matrix of options between 1440p/30fps and WVGA/120fps should be enough for most. Bluetooth and Wi-Fi, a tiny LCD display and a microSD slot complete the Session.

As hot as... the original meaning of 'stoked'

$590 / gopro.com

HOT FIVE #4

THE SONY RX1 OF LEICAS

Leica Q

Like the Audi of cars, or the San Pellegrino of fizzy drinks, Leica can be best described as the Leica of cameras. Which is to say that, while you can spend a lot less money for something very similar, it won't be a Leica. But it's not just the smart little red dot that has us contemplating a second mortgage: we're also taken by the Q's fixed 28mm f1.7 lens, behind which a full-frame 24MP sensor is mated to a custom processor that can push the ISO up to 50,000, giving it the low-light smarts of an owl that's just had two bowls of carrots. There's 1080p video at 30 or 60fps, NFC, Wi-Fi and a 3in touchscreen. Low-tech, this camera certainly isn't. Expensive, it certainly is. But anyone who says "Oh, a Leica, they're like the Apple of cameras" is just hoping you'll let them have a go.

As hot as... James Bond's Q
$5990 / leica-store.sg

HOT FIVE #5

VR GOING TO HAND IT TO YOU

Oculus Touch

By now your Oculus preparation should be well underway. You should be compiling the bits needed to build a kick-ass PC. You will have got rid of most of the furniture in your lounge to allow for lurching room, and unburdened yourself of any extraneous items such as partners, jobs and sporting interests. But you need to add another line to your budget. We now know that Oculus has teamed up with Microsoft and will be bundling an Xbox controller (with a PC connector) for basic game menu navigation and movement. But the real hand controls will be these newly announced Oculus Touch controllers. They feature various motion and position sensors, as well as vibration feedback motors so you can 'feel' objects in VR.

As hot as... your palms after the first hour

$tba (due Q 2) / oculus.com

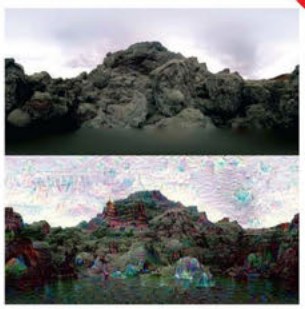
WHERE YOU'LL FIND US IN 2016

EVE: VALKYRIE

Multiplayer spaceship dogfighting in immersive, high-definition VR with *Battlestar Galactica*'s Katee Sackhoff as a CO and guide? Shaddup and take our money already.

EDGE OF NOWHERE

Where we hope the Rift experience will excel is in roaming RPG adventures, like this wintry spookster, where you'll be able to make intuitive run-and-jump decisions.



A MACHINE GOES MAD

Humans love pattern recognition. It's how we learn to read and recognise. You can turn a tiger upside-down and put it in a hat, and we'll still spot it as a tiger. Also a prime selfie opportunity. But a side effect is that we generate patterns where there are none – "That aubergine looks like Billie Piper!" – and now Google's image recognition AIs have been shown doing the same. Trained by experience to define shapes as dogs or faces, just as children do, the AI will begin to see them in any image if it's given enough goes. A bit like a human staring at some clouds, or an android dreaming of electric sheep.

NEWS FEED

SHOOT NOW, FOCUS LATER

The world is big and time is short, so Panasonic is developing a 'Post Focus' mode for its new DMC-GX8 and DMC-FZ330 cameras. It basically takes a rapid burst shot of every possible focus point, so you can pick later which you want. Clever.

WIRELESS WISES UP

That Samsung ad where Rita Ora's phone gains about 20% on a wireless charger is one of the saddest things we've seen. Good news, then, that a new powerful wireless charging spec is on the way: 15W is three times the power... but you'll need a new phone.

NOW YOU USB-C IT

Happy times if you're a ports and cables standards fan (there's a lot out there). USB-C has hit the big time since Apple introduced it on its new MacBook, and now Intel has said that Thunderbolt 3's 40Gbps will work via a USB-C interface.

THROW YOUR DRONE IN THE AIR, USE WITH CARE

Lily

US$1000 ($1370)/ lily.camera

Don't have your own camera-drone pilot? We do, and Lily is making him nervous

She's not the first.
The first follow-me drone we saw, called AirDog, was successfully Kickstarted last year and lots of excited crowdfunders are perched on their doorsteps, awaiting delivery this autumn. But now a new auto-follow drone called Lily has arrived on the scene, promising more functionality, better looks and a lower price if you'll wait just a bit longer. Some of those perched pre-orderers are looking a little antsy.

She's a looker.
Lily is distinctly more of a finished product that the GoPro-carrying AirDog. Eye-like lights display her status, and the camera is held in what looks disconcertingly like a mouth. Instead of the more traditional mechanical gimbal that drones like the DJI Inspire series use to steady their cameras, Lily has digital stabilisation: basically a big sensor that she crops into intelligently, taking 1080p video from the stable centre of the frame. There's 120fps shooting for you slow-mo fans, and at the push of a button on the remote she'll take a 12MP still. All is saved to the included microSD card.

You can run but you can't hide.
Well, you can. Just go inside. But generally speaking, Lily will do her level best to keep you in the frame. Following app-inputted orders to keep you in front, to the side, or to loop around you, Lily will stray no further than 15m above or 30m away from you. She can fly at up to 40kph, ideally in light winds, and she can do that for 20 minutes. Which, frankly, is more than enough future video-editing work for one day, but two hours of charging will see you good to go again if you fluffed the run. The wrist remote has a microphone that will catch the expletives if and when you mess it up.

THE WRIST REMOTE HAS A MICROPHONE TO CATCH THE EXPLETIVES WHEN YOU MESS UP

THE UPS AND DOWNS

Launch Lily
So long as the blue eyes are lit, lob her into the air and she'll quickly gain a stable hover and wait for you to do something interesting. The body is waterproof and floaty, so you can launch from the water.

Launch yourself
Via the iOS or the Android app you can preset which flying pattern you want Lily to follow. She'll avoid getting closer to you than 1.75m, because that's a nice distance for spinning blades to be kept at.

Land Lily
Presuming neither you nor your remote documentarian have come a cropper during your run, and there's some of the 20min battery life left, Lily should land demurely on your hand.

pebble

pebble

time

COMING SOON

ALWAYS ON COLOR DISPLAY

9.5 mm

COMFORTABLE THIN CURVED DESIGN

THOUSANDS OF WATCHFACES

WATER RESISTANT 30M

7 DAY BATTERY LIFE

VOICE REPLY

NOTIFICATIONS

FITNESS AND SLEEP TRACKING

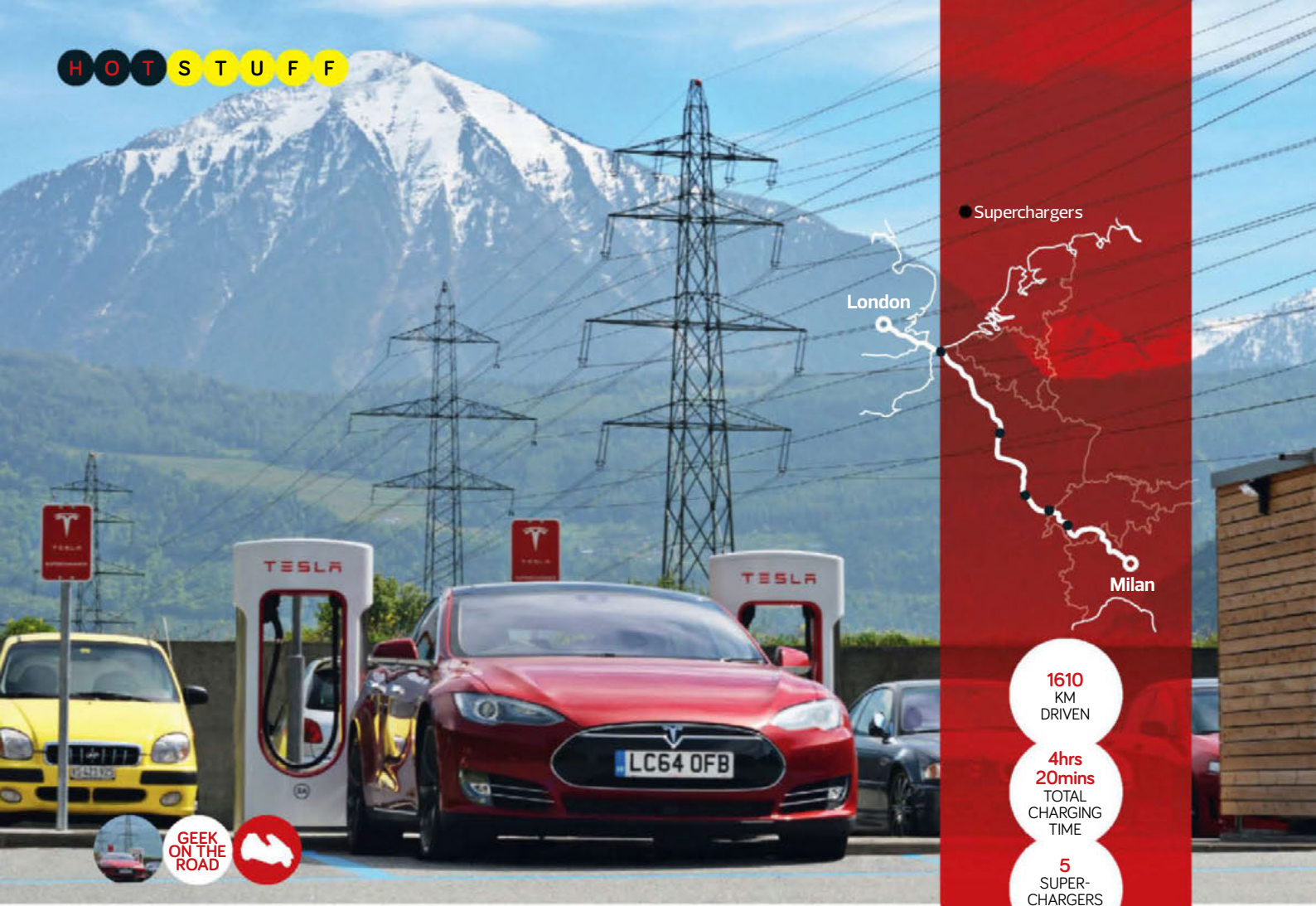
Works with Android™

Made for iPhone

DO FOLLOW US FOR UPDATES AT:

PEBBLE SG

Exclusive Agent & Distributor
Leader Radio Technologies Ltd.



1610 KM DRIVEN

4hrs 20mins TOTAL CHARGING TIME

5 SUPER-CHARGERS VISITED

£250 ($532) COMPETITOR CAR PETROL COST

GEEK ON THE ROAD

ELECTRIC ROAD TRIP

Can you drive 1610 km without a drop of petrol? Will Dunn investigates just how far you can get in a Tesla Model S

Because it's not easy to drive for 1610 km in the UK without plunging into the sea at some point, our electro-quest aimed for Milan, via the Eurotunnel (also electric), a few mountainous wiggles and five Tesla Superchargers.

The Calais Supercharger's a pretty bleak spot, but the others we visited were generally nice places to stop for lunch: one in Champagne is next to a shop that sells locally foraged truffles, while another in Switzerland overlooks a glassily clear, fish-filled lake with a sublime view of the Alps. Plan your charges to coincide with meals, and it doesn't feel like waiting around at all.

Superchargers are still few and far between compared to petrol stations, and at the moment a Supercharger-only trip will involve some extra miles, but the Model S does all the range-worrying for you. On our first stretch, a fast 322km motorway run, it warned me to dial back my speed by 10km/h to save energy, and as I did, the car readjusted how many miles we'd have in the battery when we arrived at the next charger.

The Model S is a stunning car for a road trip: American-sized and comfortable inside, it has smart, speed-adjusting cruise control that makes long-distance motorway stretches easy and relaxing. But it was when we started to climb from France to Switzerland, and then towards the high mountain pass into Italy, that the Model S really began to have fun; the sporty frame and the formidable torque from the motors made every sinuous bend a joy to whoosh through.

It was also in the hills that we put the battery to its most stringent test. Not only were we driving inefficiently, we were also pushing a weight up a mountain, and the car's range estimates plummeted. But while the ascent took its toll on the battery, the long, steep descent on the other side did the opposite: from the 2000m-high Simplon Pass down into Piedmont the car used its regenerative brakes to charge itself, and by the time we reached our first stretch of *autopista* it had added 30km of range, using only the magic of gravity and dynamos.

The only truly worrying point in the entire 1610 km journey came right at the end, when we had to ease the 2m-wide Tesla down into a garage in Milan that was clearly designed for a Fiat 500, but even then the car's centimetre-accurate parking assistance made it relatively simple. The Supercharger network hasn't made it much further south than Milan yet, but there's always Scandinavia...

APPLE MUSIC
WORTH DITCHING SPOTIFY FOR?

ONE

ITS PLAYLISTS DO HAVE A HUMAN TOUCH

At the middle of Apple's aluminium-framed iRobot, locked in the White Room, it seems there really is the beating heart of a human. We were pretty sceptical of Apple's claims that algorithmic playlists are a bit rubbish, and that real people would be at the core of Apple Music, but it turns out they may have a point. We've already spent a ludicrous amount of time delving into playlists based around things we like, and they're full of greatness.

TWO

BEATS 1 RADIO IS ACTUALLY QUITE GOOD

Unsurprisingly, Apple apes other services with radio stations based on artist or genre. But its ace card is Beats 1, a worldwide 24/7 station with actual living DJs. So far it seems pretty decent, offering a fairly diverse selection of tunes betwixt mainstream and indie. It also might turn some people on to radio, if they can stop complaining on Twitter that people are "stupidly talking all over the music". Just like they do on radio.

THREE

IT'S CLEVER AT MERGING YOUR MUSIC

Apple is a big fan of sucking you into its ecosystem. It rather cunningly did this with iTunes Match (which, like Google Play, mirrored your old ripped CDs in the cloud). Now, Apple Music happily merges what's in your iTunes app with what's on the iTunes Store. This works across Macs and iOS devices, and makes Spotify's desktop-only optional inclusion of local content look a little rudimentary.

FOUR

IT'S A SKINFLINT'S PARADISE

When you sign up, you get three months for free. Frankly, we reckon the 30 days you get with other services is pretty generous, but this is an entire summer of music, for nothing at all. And due to Taylor Swift suitably guilting Apple, artists will get paid and everything. So that's a win-win-win. If you are just cruising for free, don't forget to go into your account settings and disable the 'auto-renewal' switch.

...BUT

IT NEEDS A BETTER BITRATE

Apple's Eddy Cue cryptically tweeted that the music's bitrate "depends on whether you are on Wi-Fi or cellular". On 3G, we've found it bounces between merrily munching through data and being unuseable. On Wi-Fi, we suspect you're getting streamed versions of what's on iTunes (256 kbps AAC – comparable with Spotify's highest quality). But there's no manual control, and no Tidal-style lossless option.

NOW WE KNOW THE DATE OF THE BEAST

Windows 10

$free / microsoft.com

Twisty 'tops like the Acer Switch 10 are just the sort of thing that Win 10 likes to crawl into

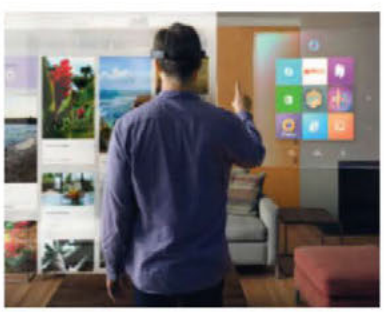
Whether you loved or hated it, you can kiss Windows 8 goodbye forever...

But only on your PC.
Stuff has a man locked away in a room; his only task is to ride the 'fast' update cycle of Windows 10 pre-release builds. During the last Haribo delivery he reported that the bugs were getting fewer and fewer, the Windows 10 experience getting slicker. But this isn't Microsoft's first rodeo. And so it's concentrating on the PC launch before it gets to the phones, the HoloLenses, the Xboxes and the Surface Hubs.

There are seven versions.
An alarming prospect, but most of us can ignore the Enterprise and Education versions. For us, it's Windows 10 Home, Windows 10 Pro and Windows 10 Mobile – the new moniker for Windows Phone. Any of these three versions are free for existing Windows 7 and 8.1 users. There doesn't seem to be any nasty small print about that. Home is the most basic, but is still your go-to choice for everything from desktops to hybrids and tablets, and it is packed with Cortana, Continuum and the new Edge browser. Pro only adds small business security tweaks and mobile working wotsits.

There's multi-state madness.
Our man in the can is super-excited about how slickly Windows 10 handles switching between the keyboard and tablet modes. With a single desktop screen replacing Win 8's big-box, little-box chaos, the whole experience has been much finessed. It's an indicator that Continuum – the synchronicity of mobile and desktop apps – might actually work. Meanwhile, rumours suggest the Explorer-eradicating Edge browser will run Chrome and Firefox extensions, despite not being based on the same Webkit platform. How? Best ask Cortana. Make use of her being entwined into all versions of Windows 10.

THE EDGE BROWSER MAY RUN CHROME EXTENSIONS. HOW? BEST ASK CORTANA



SOMEBODY HELP US...

WE'RE GIDDY ABOUT WINDOWS 10

Continuum!
Ah, the prospect of sauntering into the BA lounge, plugging a smartphone into a monitor and nailing some spreadsheets using proper desktop Excel. (Mainly, the BA lounge bit.)

HoloLens!
Windows' motto used to be "Where do you want to go today?" Now it's "Wanna stay at home and explore dinosaur anatomy in VR using HoloLens?" And the answer is "Yes".

Actualness!
Not a trademarked feature, but a revolutionary aspect of Windows 10 is how real it is. Preview builds of the OS have been available for months, and we know how it's going to be.

2015 FORMULA 1
SINGAPORE AIRLINES
SINGAPORE GRAND PRIX

HOME OF FORMULA 1®
NIGHT RACING

18.19.20
SEPTEMBER 2015

SINGAPORE
MARINA BAY
STREET CIRCUIT

FIA FORMULA ONE
WORLD
CHAMPIONSHIP

TCR
INTERNATIONAL
SERIES

PORSCHE
CARRERA
CUP ASIA

ALSO FEATURING
WORLD-CLASS ENTERTAINMENT

PHARRELL
WILLIAMS
18 SEP FRIDAY

MAROON 5
19 SEP SATURDAY

JIMMY CLIFF
18 SEP FRIDAY
20 SEP SUNDAY

SPANDAU
BALLET
19 SEP SATURDAY

BON JOVI
20 SEP SUNDAY

ONLINE BOOKING WWW.SINGAPOREGP.SG
PHONE BOOKING 6738 6738
AVAILABLE AT ALL SISTIC OUTLETS

FOR HOSPITALITY ENQUIRIES
6731 5900
HOSPITALITY@SINGAPOREGP.SG

TITLE SPONSOR
SINGAPORE AIRLINES

PROMOTED BY
singapore GP

HELD IN
YourSingapore

SINGAPORE GP OFFICIAL PAGE
@F1NIGHTRACE
@F1NIGHTRACE

Download on the App Store
GET IT ON Google play

The F1 FORMULA 1 logo, F1, FORMULA 1, FIA FORMULA ONE WORLD CHAMPIONSHIP, GRAND PRIX and SINGAPORE GRAND PRIX and related marks are trademarks of Formula One Licensing BV, a Formula One group company. All rights reserved.

Artiste line-up subject to change

APPS

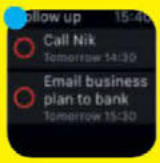
This month's mobile must-downloads

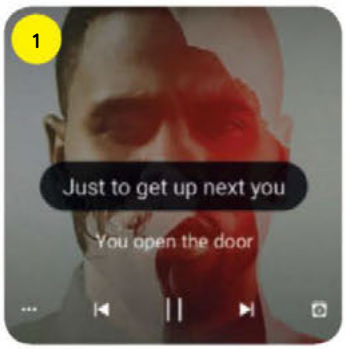
3 OF THE BEST APPLE WATCH APPS

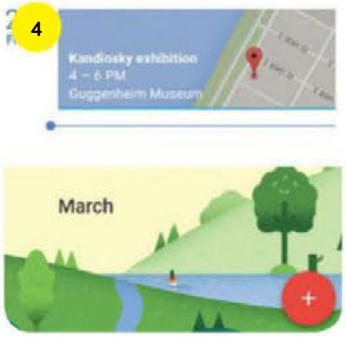
CLEAR
$5.98
This simplest of simple apps fills a crucial gap in the Watch's repertoire: to-do lists. Set them on your phone, tap the tasks on your Watch as they're completed.

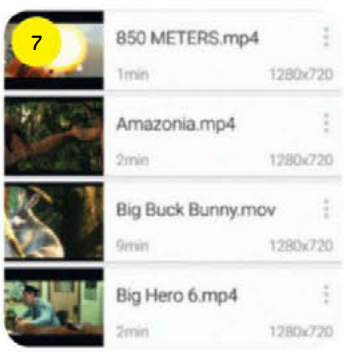
RULES!
$3.98
Developers who found their mojo creating simple concept games should be in their element with the Watch. This mini-game is just complex enough, we reckon.

STRAVA
from $free
Nike+ and Strava are the apps we get the most feedback about. What an athletic lot you must be. Nike+ looks great on the small screen, but Strava gets the nod for reliability.









1 Musixmatch
$free / iOS, Android
A significant UI overhaul for the lyrics-serving music app: the Floating Lyrics feature is more powerful, popping up in Spotify or your lock screen, and there's an Apple Watch extension too.

2 Twitter
$free / Android
A trolleyload of Twitter tweakery has trundled into Android town. The new Highlights feature pokes you twice a day to show you smashing things. iOS users will get it once Androiders have stopped shouting.

3 Does Not Commute
$free / iOS, Android
Your task here is to drive vehicles across a top-down cityscape. But each journey you complete repeats while you're driving the next, so that soon you're having to avoid your own self-made gridlock.

4 Google Calendar
$free / iOS
"Be together," said Google. "Not the same." And now we can be together in that iOS users can use Google's delicious calendar app. But we *are* the same, because we're all using the same app.

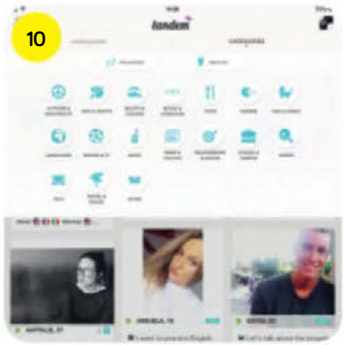
5 Ryan North's To Be Or Not To Be
$6.98 / iOS, Android
A choose-your-own romp in and around the *Hamlet* narrative. North is the writer behind the *Dinosaur Comics* and *Adventure Time* comic books, so it fairly barrels along.

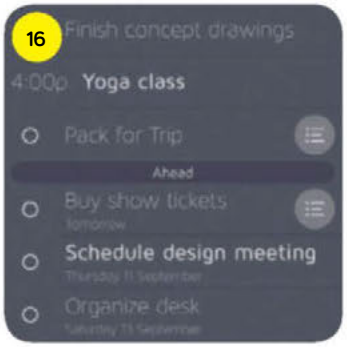
6 Sky Sports Soccer Quiz
$free / iOS, Android
Score by answering questions correctly, which veer from stupidly easy to weirdly obscure, but head-to-heads provide some diverting post-match entertainment.

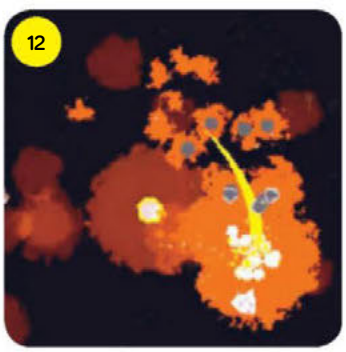
7 VLC for Android
$free / Android
VLC, a video player brand striving to turn its desktop fans into app users, knows you use your eyes and ears separately, so it lets you bring other apps to the foreground and still hear the audio.

8 Grim Fandango Remastered
from $12.98 / iOS, Android
It's a lot of money for a mobile game, but this port of the recently released desktop remaster is a whole lot of noirish point-and-click for your money.

9 Spacecom
$4.98 / iOS
You don't belong here. You should be up there, flitting between planets. Trading, warmongering, succeeding. But here you are, having to make do with this slick, involving space sim.







10 Tandem

$free / iOS

By connecting via Facebook profiles, Tandem matches you up with like-minded people across the globe who are ready to help you practise a new language and develop their own skills.

13 Fallout Shelter

$free / iOS

Fallout 4 is a long way away, so this iOS game from Bethesda has a lot of anticipation to help us deal with. It's a tower management sim, except that the tower is underground and is a shelter.

16 Glass Planner

$free (+ IAP) / iOS

Want your reminders and your calendar in the same place? Glass does just that. A sleek design means it's easy to combine daily tasks; all it needs now is matching iPad and Android versions.

11 Lumy

$3.00 / iOS

This app helps photographers catch the 'magic hour' at the start and end of the day when the light is best. This version lets you drop exact map pins, as well as adding Apple Watch compatibility.

14 Magic Duels

$free / iOS

If you thought *Magic: The Gathering* card games were already on iPhone, no. But now they can be, with the release of *Magic Duels*. Blizzard's *Heroes Of Warcraft* is the big rival, so it will have to be awesome.

17 Livescribe for Android

$free / Android

Livescribe users can finally connect their techy pens to their Google devices – transferring recordings and PDF copies of handwritten notes to their KitKat-or-better tablets and phones.

12 FireWhip

$1.28 / iOS; $1.33 / Android

Having grown up on *Indiana Jones* films and *Castlevania* games, we're preconditioned to pay for anything with a whip in it. Sometimes, as with this fiery score-builder, that's a great idea. Sometimes it's not.

15 Earthcore Shattered Elements

$free / iOS

A four-elemental card-matching game, *Earthcore* follows Bushnell's Law perfectly: each stage becomes increasingly difficult as you unlock more creatures and abilities.

18 Test Chamber

$free / iOS, Android, Windows

A stylish exploration game based on finding the Infinite World, *Test Chamber* features a series of non-Euclidean puzzles for a *Portal*-esque fix on a handheld device. ($10 gets you a Steam desktop version.)

ON THE HORIZON

STAR WARS

$free

iOS, Android

And by 'On The Horizon', we mean spatially, as Disney is keeping its new *Star Wars* app in the US for now. But were it here, or were you there, you'd be enjoying the ability to upload selfies into Star Warsian scenarios, and to have your local weather translated onto well-known galactic locales. There's a library of all-encompassing character GIFs and sound clips. And, of course, there's the promise of having the very latest news about the new film, due to air in December.

App:roved

FOR FANTASY FANS

Rival Kingdoms

This is fort-smashing wrapped up in a sumptuous fantasy package. If *Clash Of Clans* didn't look like your cup of tea, then give *Rival Kingdoms* a go. Build intricate defences, assault your opponents, and group together for en-masse wars of attrition. Multiplayer warfare on this scale has never been easier from your mobile — and it features dragons, which means you can pretend to be Daenerys Targaryen assaulting King's Landing while at the bus stop.

Stuff says ★★★★☆
$free / iOS, Android

FOR PAPER NUTS

Foldify Dinosaurs

Scientific understanding of dinosaurs continues to evolve rapidly, with depictions of these beasts shifting from huge lizards to monstrous feathered creatures. With Foldify Dinosaurs you can take the logical next step: paint an origami Triceratops in eye-searing hues and claim it's a palaeontology breakthrough. There's a real-time 3D preview, and when yours is complete, fire off a PDF or AirPrint it then build it for real. Your dinosaur-loving kids (ie: actually you) will love it.

Stuff says ★★★★☆
$4.98 / iOS

FOR SPACE-LOVERS

Sunburn!

This darkly comic dexterity test arrived on iOS last year and is finally out for Android. The premise: your ship is gone, its crew scattered in space — and they don't want to die alone. As captain, with the sole remaining serviceable jetpack, you must use your limited fuel supply to collect colleagues (and pets) on an annoyingly elastic tether, and head for the heart of the sun. Imagine a pixel-art *Gravity* video game with a sense of humour and you're there.

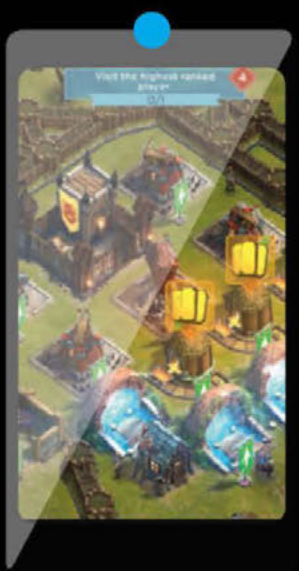
Stuff says ★★★★☆
$3.27 / Android; $3.98 / iOS

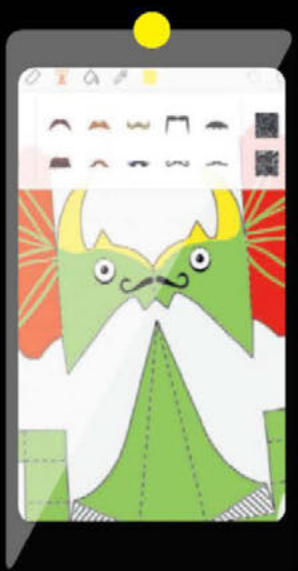
FOR HAPPY SNAPPERS

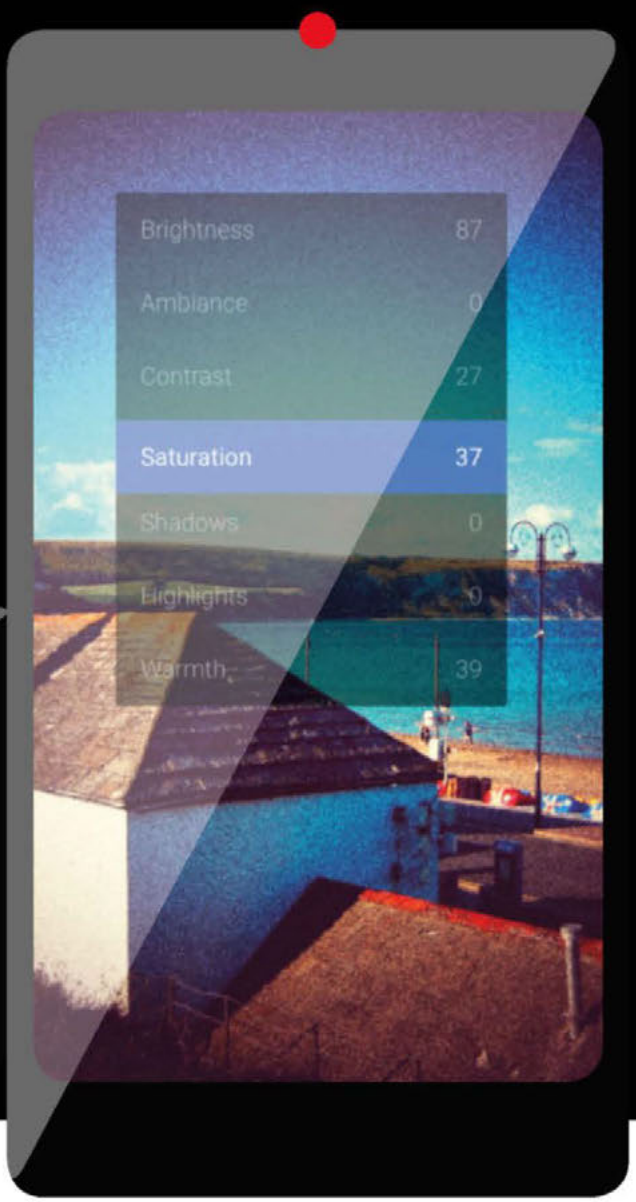
Snapseed

The Google-owned image editor returns with a major overhaul, boasting Material Design that looks smart on Android if a bit weird on iOS. Snapseed retains its usability, though, and it's easy to add filters and make basic adjustments to photos. This update greatly increases the app's power through non-destructive effects — at any point you can delve into your edit 'stack' and tweak or delete a step. Given the absence of a price tag, there's no reason not to give it a try.

Stuff says ★★★★★
$free / Android, iOS







FOR TEXTY TITIANS

TypeDrawing

When touchscreens arrived, people derided the notion of virtual finger-painting because that was 'for children'. The fools! Being able to directly manipulate on-screen canvases with a digit changed creativity in exciting ways. In this app, your digital paintings comprise user-defined text strings, the characters sized by the speed of your strokes. An iOS classic now on Android, it's free, but IAP can remove the ads and get you more fonts.

Stuff says ★★★★☆
from $free / Android;
$2.58 / iPhone; $3.98 / iPad

FOR THOUGHT CONTROL

MindNode

No need to flip back to the cover to check if you accidentally picked up *Business Stuff Digest* – yes, we really are covering a mind-mapping app. But that's because MindNode is perfect for sorting your thoughts, no matter what kind of thinking you happen to be involved with. The branching diagrams are easy to create on Mac or iOS and can have images and 'hidden' notes applied; there's even an Apple Watch app for browsing recent documents in outline view.

Stuff says ★★★★★
$12.98 / iOS; $25.98 / OS X

FOR CONSOLE CRAVERS

Implosion: Never Lose Hope

Implosion developer Rayark aims to bring AAA console gaming to mobile. It's a lofty goal, but this is certainly a fab-looking slice-and-dice action title with seriously impressive production values. The audio and controls are great and the visuals shine on smaller displays (although they're a touch blurry on iPad). It's tough, premium and lasts well over a dozen hours: it won't replace your PlayStation but the gap is closing.

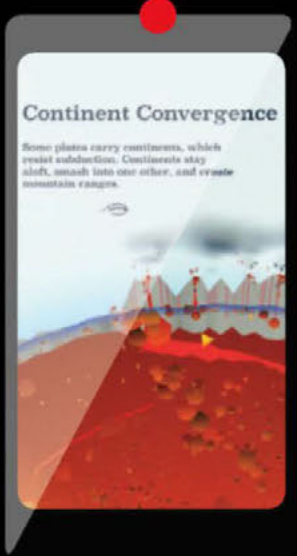
Stuff says ★★★★☆
$7.99 / iOS, Android

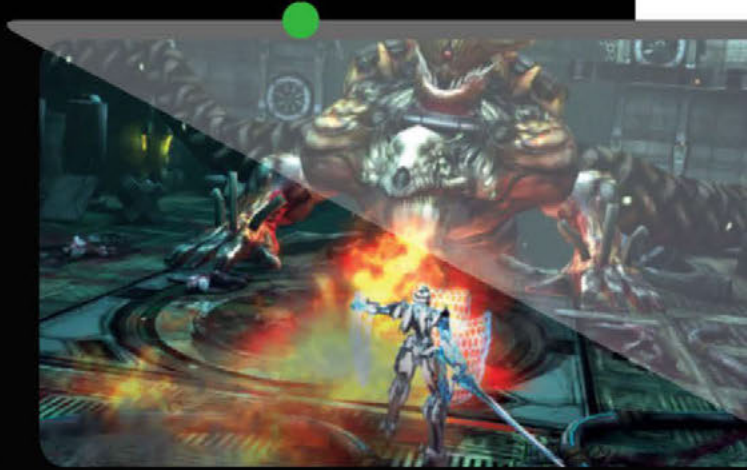
FOR MEGALO-MANIACS

Earth Primer

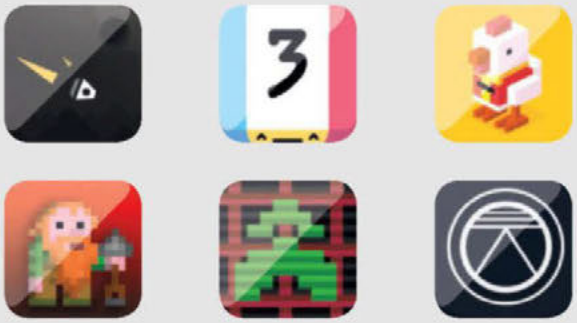
This interactive science book lets you create volcanoes with your fingers. If that doesn't interest you, you're probably dead inside. But if you're already on the App Store you'll enjoy this title, which blasts through various facets of our planet before leaving you in the Sandbox: this final section is a free-form mini-*Populous*, where you build mountains, bake the ground, raise sea levels and blow gales. Perfect for kids of all ages (particularly those in their 20s, 30s and beyond).

Stuff says ★★★★★
$7.99 / iPad



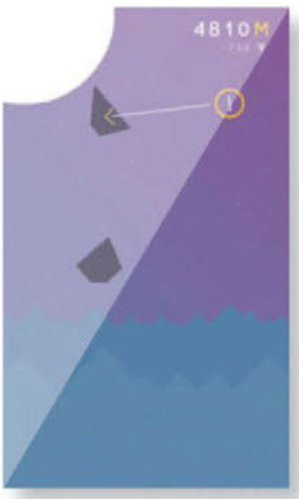


Mini meme



CLASSIC ONE-THUMB GAMES

Six first-rate titles for those times when your gaming brain can only cope with input from a single digit



Alone...

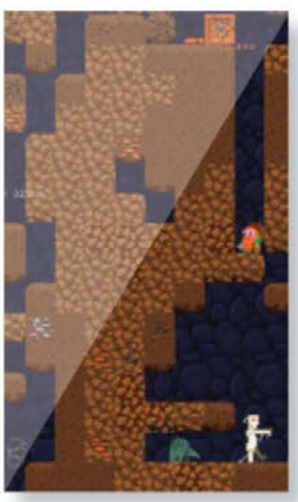
Channelling the spirit of leapy platformer *Canabalt* and a hint of the 'Flappy' titles, this is an exhilarating one-thumb survival game on fast-forward. You hurtle through the void at breakneck speed, a thumb nudging your craft up or down as rock faces, comets and debris blaze past. Your inevitable demise is only ever moments away.

Stuff says ★★★★★
$2.58 / iOS; $1.99 / Android

Crossy Road

Revamp *Frogger* in chunky isometric visuals, add some trains, make the poor frog's journey never-ending and you've got *Crossy Road*. Add a massive cast of characters (unlockable via an in-game one-armed bandit or, if you're impatient, IAP) and lashings of humour, and you've a well-deserved viral one-thumb classic.

Stuff says ★★★★★
$free / iOS, Android



Doug Dug

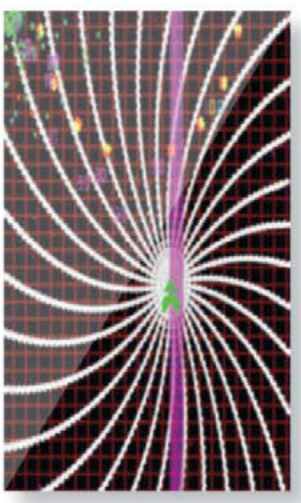
Greedy dwarf Doug wants all the bling, and so he must dig. But deep underground is full of deadly, hungry critters. The biggest enemy, though, is perhaps the earth itself, which unsportingly tends to cave in and crush you, in this entertaining game that has more than just a whiff of *Mr Driller*, *Spelunky* and *Dig Dug*.

Stuff says ★★★★★
$2.58 / iOS; $1.24 / Android

Threes!

This calls itself a tiny puzzle game, yet on worming into your brain, its demands on your time will be anything but tiny. You swipe to match numbered cards, manipulating the entire board to create chains that leave spaces open for newcomers. It's 2048 times better than pretender *2048*, and among mobile's best puzzlers.

Stuff says ★★★★★
$3.98 / iOS; $2.99 / Android



Gridrunner

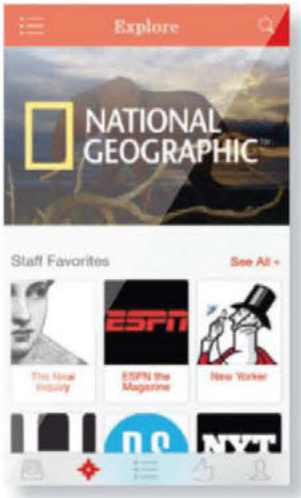
At a glance, *Gridrunner* oozes '80s arcade charm, with lurid graphics and single-screen gameplay. But this is a thoroughly modern blaster — the best on mobile — cramming bullet-hell into a shoebox. A single digit directs your tiny auto-shooting vessel as it attempts to avoid endless foes intent on your destruction.

Stuff says ★★★★★
$free / iOS; $0.99 / Android

Fotonica

Canabalt in 3D merged with *Rez*-like abstract visuals: *Fotonica* is greater than the sum of its parts. Hold to run and release to leap into the air, working your way along complex pathways constructed before your very eyes. The electrifying dream-like atmosphere and superb music make the game experience all the more potent.

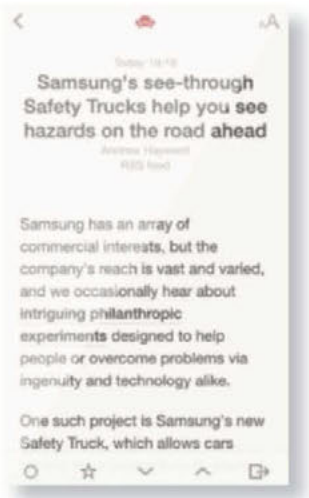
Stuff says ★★★★★
$3.98 / iOS; $0.89 / Android



Longform

The idea here is to buck the trend of bite-sized online articles and get people reading news stories with depth. The app sometimes comes across like a worthy Twitter, but there's something great about it only listing articles of 2000 words or more; it's ideal for people who don't have a short attention... *SQUIRREL!* Sorry, attention span.

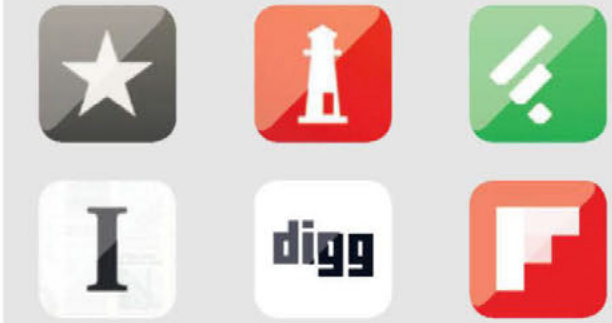
Stuff says ★★★★☆
$free / iOS



Reeder

For when Feedly isn't enough, there's Reeder – well, at least there is if you've got an iPhone. The app's a stylish and smart way to browse and read RSS feeds, and the built-in 'Readability' view strips articles to copy and images alone. Apple might bang on about animations and bling, but we just want the words, man.

Stuff says ★★★★☆
$5.98 / iOS



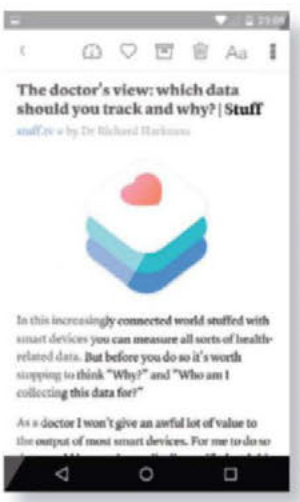
HAVE WE GOT NEWS FOR YOU...

iOS fans don't need to wait for Apple's News, and Android won't be getting it anyway – so install these apps instead to stay in the know

Feedly

When Google set fire to Google Reader, Feedly heroically took over, providing a robust, free way to subscribe to website RSS feeds. The world might look on in scorn from their Twitters and their Facebooks, but you'll use this app and know you're not missing important news due to an inundation of lolcat GIFs.

Stuff says ★★★★☆
$free / Android, iOS



Instapaper

Uniquely for this round-up, Instapaper isn't designed to bring the news to you – you send the news to Instapaper, via a browser shortcut. It's essentially, then, a PVR for saved articles, also stripping out junk to leave pure text and images. Got nothing to send? The 'Browse' section has you covered.

Stuff says ★★★★★
$free / Android, iOS

Digg

Once the darling of the internet, social news site Digg fell on hard times and had to do the web equivalent of busking for pennies. Its current incarnation on mobile, dating from a 2012 relaunch, is very smart indeed. The app is simple but sleek, and the feeds feel as though they've been edited for you by actual humans.

Stuff says ★★★★☆
$free / Android, iOS

Flipboard

Apple News is clearly heavily inspired by Flipboard, so go for the original, which is also on Android. Follow people and topics! Compile and share custom mags! Get irritated by the gimmick that pretends scrolling doesn't exist! You can also browse Twitter timelines, which is weird but oddly good.

Stuff says ★★★★☆
$free / Android, iOS, Windows Phone

SPORTS MATTERS

16-17th SEPTEMBER 2015
SINGAPORE

REGISTER NOW

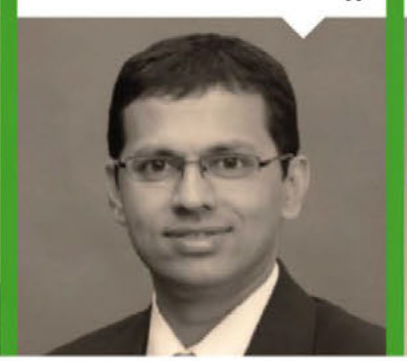
www.sportsmatters.asia

THE WHO'S WHO IN SPORT WILL BE AT SPORTS MATTERS 2015 - WILL YOU?

"It has been a honour to be a part of a conference that presents sport as a dynamic and exciting platform – with engaging thought leadership on corporate innovation; as well as networking opportunities for partnerships and collaborations that will inspire future business."

Teck Lim Yin
CEO, Sports Singapore

"I thoroughly enjoyed attending Sports Matters. The programme was top notch with some great speakers and I enjoyed addressing a full house."



Rahul Welde
VP Media Asia, Africa, Middle

"I truly enjoyed myself during two intensive days and connected with lots of industry leaders. Thanks for your initiative and leadership."

Kunihito Morimura
President & CEO, Dentsu Sports

"It was great to see Sports Matters bring the global sports industry together. I met a lot of old friends and some great new potential business partners."

Ward Platt
COO, Fox International Channels, Ceo National Geographic Channels International

Produced by

BRANDED

campaign Asia Pacific

Partners

FOX SPORTS

SAMSUNG

THE BEST CAMERA IN THE WORLD IS ALREADY IN YOUR POCKET

HERE'S HOW TO USE IT.

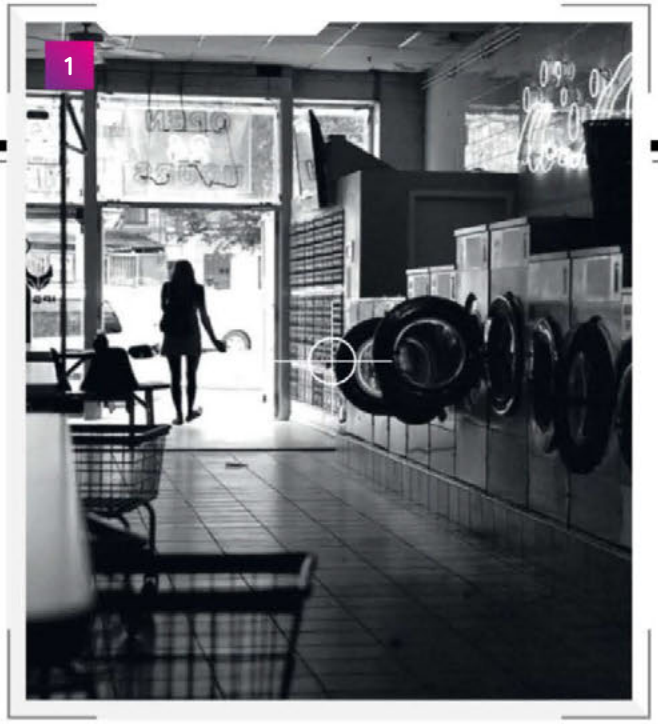
SELFIES

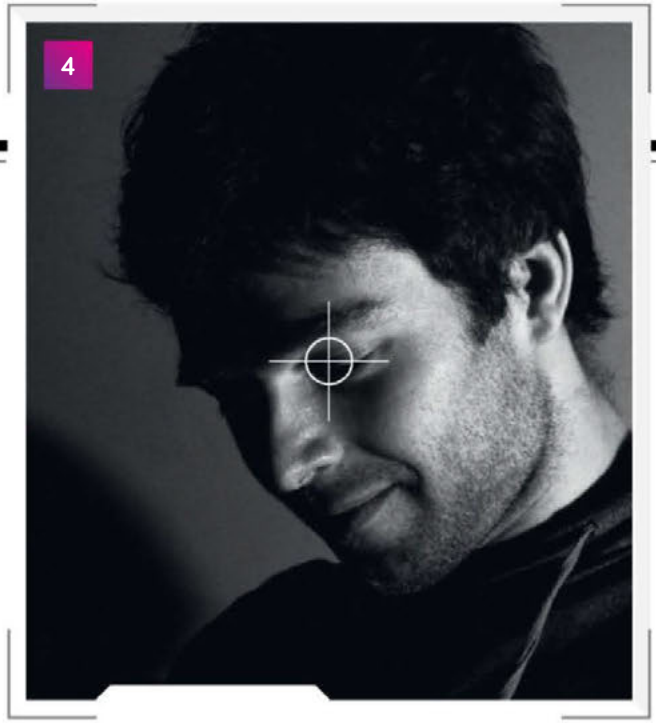
Let's get this out of the way, shall we? You can say it's for a passport or a profile pic, but we've all selfied at some point. So you might as well learn to do it properly...

1 Angle for compliments Shooting yourself from below is generally a bad idea: it will double up your chin and turn your nostrils into the MCE Tunnel. Bring the lens up to eye level or try slightly above head height as you look up. Steady on... too high and you'll look like an advert for a hair loss clinic.

2 Time it right You've got a better chance of posing more naturally if you prop up your phone somewhere and use the self-timer function.

3 Light is your friend You might think the best time for a selfie is when you're all alone, indoors, at night. However, dim lighting ramps up the camera's sensitivity and adds a load of digital noise to your face, transforming even a perfect complexion into corned beef. Better to shoot in daylight – outside in the shade, or close to a window if you're inside.





BLACK + WHITE

Shooting black and white photos should be easy, right? And yet a quick glance through Instagram shows people struggle with what makes a good monochromatic photo...

1 Contrast is key

Because black and white photos are colourless, the viewer's attention is focused on other things. Sharpness, depth of field and composition are important, but contrast is arguably the key factor in how much impact a black and white photograph has – so look for big differences between the darkest and lightest areas of the image. That's where the drama lies.

2 Shoot in RAW if you can...

If your phone or camera has a RAW mode (DSLRs, system cameras and quality compacts do, and there are apps that allow phones to shoot RAW), it's advisable to use it if you're taking pictures to convert into black and white. Yes, RAW images take up a lot more storage space, but that's because they retain all the picture information captured by the sensor – and that means you have much more scope to process images than you would with compressed JPEGs.

3 ...or colour if you can't

For phones and non-RAW-shooting cameras, it's almost always best to shoot in colour rather than using the built-in black and white settings. It's all about data: colour JPEGs contain more data than black and white JPEGs, which means you'll have more freedom to edit them when you turn them into black and white.

4 Black and white can hide flaws...

Black and white portraits often prove the most flattering, because skin blemishes disappear and the subject's most striking features stand out. Of course, upping the contrast too much can make wrinkles and fine lines more prominent than they'd appear in real life, so moderation is key. As is lighting: light your subject too harshly and they can appear ghostly or cadaverous. It is, however, generally a good idea to contrast the subject and background: keep the subject's face lit and the background dark (or maybe vice versa).

5 ...and take the nastiness out of noise

Black and white can also be used to hide the noise you get when shooting with high ISO settings. Stripping the colour makes that noise look more like film grain, something that can serve to make a shot moody or pleasingly scuzzy.

NOW ADD THIS

POLARISING FILTER

Shooting outside on a sunny day? Attaching a circular polarising filter will help provide a more dramatic, monochromatic sky without darkening clouds, buildings or other objects in frame. You can pick one up online for under $40.

GET THE EFFECT

Shooting on a smartphone? You can turn your pics monochrome after the fact, but we like **Lenka (from $free / iOS, Android)**, which makes you shoot in black and white in the first place and doesn't allow the use of a flash (although you can turn it on for continuous illumination).

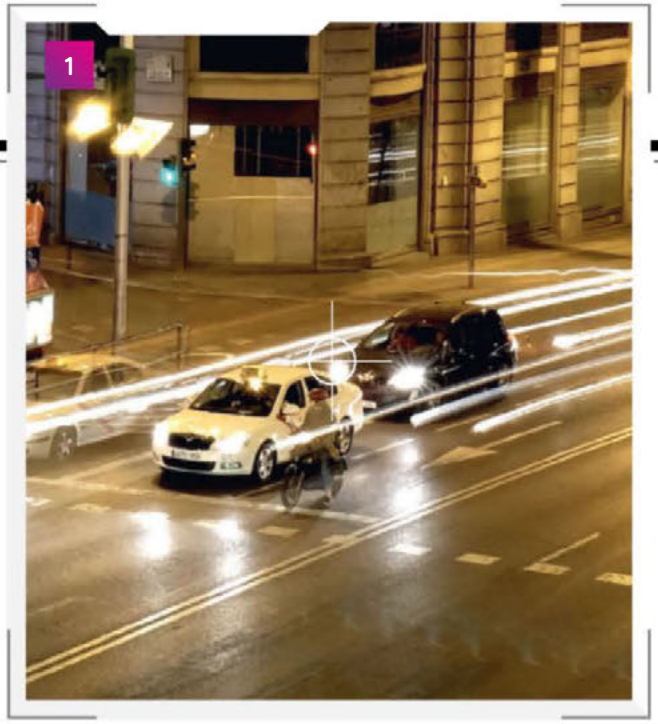
MY BEST SHOT

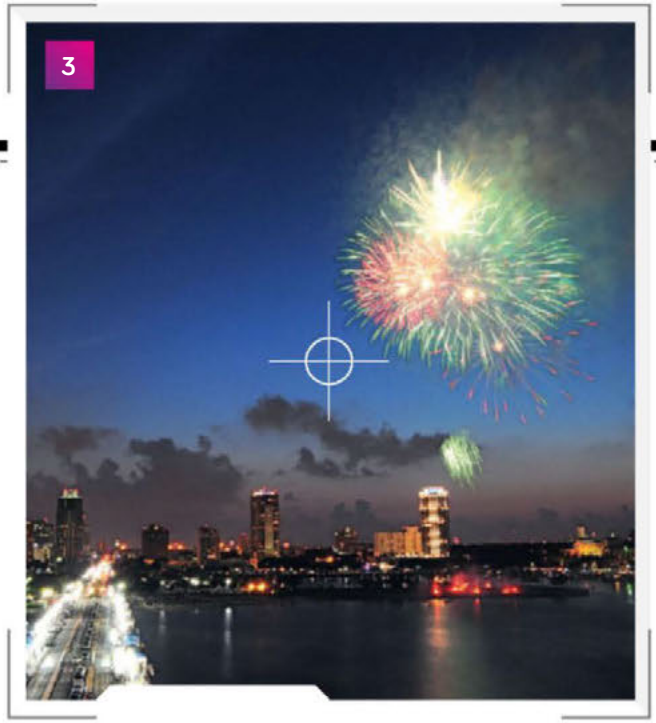
BRENDAN Ó SÉ

'SHOT ON iPHONE' PHOTOGRAPHER

"I had seen photos from Superkilen Park in Copenhagen before," says Brendan, "so I knew how I wanted to compose the image: the fluid movement of the curved white lines, combined with a human element." What Brendan wasn't prepared for was for Apple to discover this photo, taken with his iPhone 6, on Flickr and to use it in its Shot On iPhone billboard ads. The picture has now been displayed in 70 countries.

brendanose.com





AFTER DARK

We've all taken blurry birthday cake shots and rabbit-in-the-headlights flash photos, but follow these tips and you'll learn how to capture life long after the sun sets.

1 The darkness is your friend

So turn that bloomin' flash off! Not only does a flash flatten your images and reflect off shiny surfaces, it also changes the way the people in your picture act. If they know they're being photographed, they'll pose unnaturally, and if they don't, you'll just have a picture of somebody being annoyed by a big white searchlight. Try to exploit interesting light sources instead – use the setting sun to make dramatic silhouettes, catch the pools of light created by street lamps, or exploit softer sources like candles. If you have to use the flash, try deflecting or diffusing the light with a piece of paper or a napkin to create a more natural feel.

2 Slow and steady wins the race

With the flash off, your phone will expose the sensor for longer in order to get enough light. This means your pictures will blur more easily if you're moving, so hold steady or, better yet, prop your phone on something and use the self-timer for a rock-solid hands-free shot.

3 Go long

The next step is to embrace the blur with long exposures – those blurry light-paintings you see of fireworks or streams of traffic. For these you'll need an app – we recommend LongExpo (from $free / iOS) or Camera FV-5 (from $free / Android). Both apps use your phone's video capabilities – they basically knit together video frames – to create the effect of holding the camera's shutter open for several seconds. Try them out on moving lights, which will turn into streaks of colour. At traffic lights you can get both the stationary cars and the light-streaks of them moving.

4 There's more if you RAW

For dark environments, try shooting uncompressed RAW files. Because these contain a lot more info, you'll then be able change the exposure and lighten the picture using editing software later on. Again, you'll need specific camera apps – Camera+ ($3.98 / iOS) lets you shoot lossless TIFF files, while Camera FV-5 will let you shoot full-size DNG files (but only on certain devices – see camerafv5.com for details). Both will be a lot more forgiving when you come to edit them.

NOW ADD THIS...

PIXELSTICK

If you become fully addicted to long exposures then you'll need a Pixelstick. You put an image on an SD card and pop the card into one end of the stick; it feeds the image to the stick's 200 programmable LEDs. Wave the wand around in a long-exposure photograph and the image will magically hang in the air. Spooky.

US$350 ($480) / photojojo.com

...AND TRY THIS

GO WITH THE GRAIN

In low light, you can get sharper pictures by adjusting your camera's sensitivity (marked 'ISO' in your camera/app settings), but this can make your pictures grainy. That's not necessarily a problem, though – use a coloured filter, or switch to black and white, and that grainy effect can start to look really nice. See, you meant to do that.

[**Photography** CityOfStPete, Ian Sane]

KIDS + PETS

Kids and pets: same thing, right? Both make you more poor and less interesting, and don't do what you tell them to, but they make excellent subjects that people will clamour to see.

1 Ditch the cheese

Young children don't understand posing – at the first hint of the word 'cheese' they'll stand there grinning like monkeys with tetanus – and unless you've trained them for a starring role on *Asias Got Talent*, neither do pets. Instead, capture them in natural poses: playing with toys; concentrating intently on putting the lid on a felt tip; daydreaming about what it would be like to be a grape. Whatever they're doing, your photos will look better if they're concentrating on that rather than you.

2 Blend into the background

If your kids or pets know you're taking photos of them, they're likely to stop doing whatever it was that you wanted to take a photo of them doing, and instead grin like a tiny maniac (kids) or lick the camera (both). If you're using a camera you can keep your distance and get in close with a telephoto lens, but a smartphone's digital zoom will only degrade the quality of the picture, so steer clear. Treat it like a kind of domestic wildlife shoot and try to remain undetected.

3 Master movement

Dogs like to run, cats can't go more than 30 seconds without washing themselves and children never sit still unless they're being told to hurry up, but the joke's on them because you can use their movement to creative effect. Traditionally, the way to deal with that is to freeze the action with a fast shutter speed. You might not have that option if you're using a smartphone, but turn the flash on and it will have a similar effect, freezing your child, preening feline or dashing hound at the exact moment the flash goes off.

4 Get a new perspective

Kids and animals are annoyingly short (unless you have a pet giraffe) so you'll want to crouch, kneel or even lie down for best results. Alternatively, shoot them from above, but in a way that makes their littleness the focus of the photo rather than just a by-product. Better still, get into their environment with them and make it part of the shot. Stick your head into that tree your cat's climbing, or the climbing frame your sprog's scaling, and use the branches or bars to frame them – it'll help give the viewer a feeling of having been there with them.

NOW TRY THIS...

Use your subject's movement to your advantage and creative effect. Set a slow shutter speed of about 1/13, a high aperture of at least f8 and ideally a low ISO, then snap away as they're doing their thing. The key is to pan with them as they move – this should keep them sharp while the background will be blurred. It's like motorsport photography, but noisier. And more dangerous.

...AND ADD THIS

Longer lenses are great for portraits. An 85mm lens like this Canon prime ($619, canon.com.sg) will compress your children's features slightly, making them look even more adorable than you already think they do. An up-close wide shot will make noses appear elongated, faces will seem stretched and they'll end up looking like a Picasso. And not in a good way.

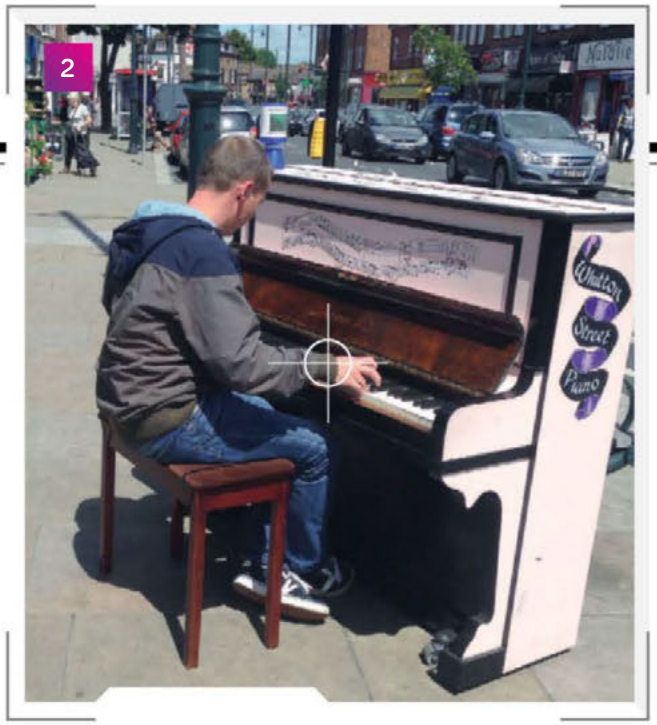
MY BEST SHOT

PETE GARDNER

STUFF **PHOTOGRAPHER**

The brutalist structure of London's Southbank Centre is a favourite haunt of mine. The walkways and staircases offer lots of unusual viewpoints. In this shot, it was the way the acid yellow staircase bisected the shadows that caught my eye. The figure gives the whole image a sense of scale and provides additional graphic interest.

petegardner.co.uk



STREET

At your side at all times, your phone is perfectly placed to document life in the big city, the 'burbs and the backwaters. The action is all around you, so just shoot what you see.

1 It's your street

Disregard any 'rules' of street photography you might have heard about. It's you calling (and taking) the shots, so it's all about finding something that's interesting to you. Shoot old, new, ordinary or extraordinary. Include people or exclude them. Make a historical document, make a statement, make a joke, tell a story or just snap what you see.

2 Make friends

Be discreet but not covert. A phone will attract less attention than a DSLR, but taking pictures in public places can still arouse suspicion. Make it as clear as possible to passers-by that you're not snooping on them. Engage with people when you can. Talk to them, put them at ease and respect them. You don't have to ask permission to take pictures of people, but if you do they'll often agree. Don't be afraid to set up a shot. Once you've done that you might be able to hang around and capture some more natural, unposed situations.

3 Fire at will

Don't assume you'll get the perfect picture with one attempt. Use burst mode to take a quick succession of photos, especially when there are people walking, talking or moving in the frame. Review your results when you get home – you might find you've snagged some interesting juxtapositions, expressions and details without realising it.

4 Explore

Go beyond, behind, above and below. The most interesting perspectives can often be found in lesser-trodden corners. Canals, bridges and tunnels often throw up striking combinations of light, colour, shapes, vistas and viewpoints. You never know what you might find. For example, by chance, we found the actual street where the classic children's TV programme *Mr Benn* was created (Festing Road, Putney).

5 Think in frames

Without optical zoom on your phone you're limited in terms of framing. The wide-angle lens will exaggerate perspectives, so work with that and not against it. Look for converging lines in architecture, street planning and other structures. Your phone's camera can also focus on fine detail in the foreground, picking up on textures and surface detail. Use the tap-to-focus feature to home in on your subject and blur the rest of the image.

NOW ADD THIS...

PHOTOJOJO IPHONE / ANDROID LENS SET

You get a lo-fi Lomo effect with these magnetic lenses whether you like it or not. We do, so that's OK with us. The telephoto is great for street photography, and while you can buy them separately for $20 you may as well get the set with wide & macro, fisheye, super-fisheye and polariser lenses.

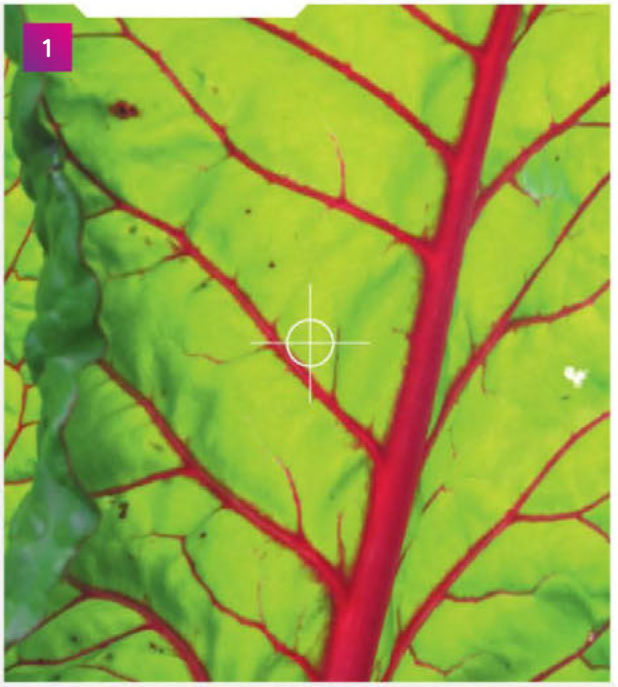
US$99($135) / photojojo.com

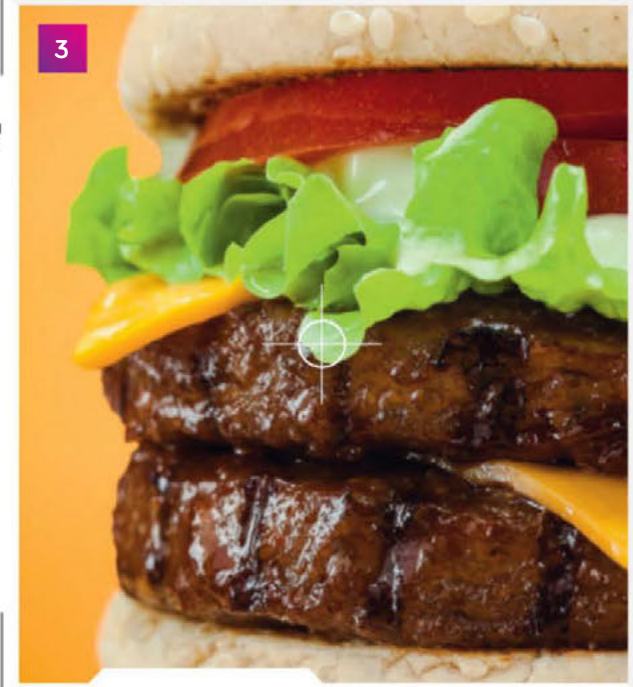
...OR ONE OF THESE

SONY A6000 WITH 16-55MM LENS

This is everything you need for top-end street photography. The A6000 is small enough to take anywhere and has a range of quality lenses to choose from. Its autofocus is lightning-fast, there's an optical viewfinder and the rear LCD flips and folds to let you frame your pictures from all kinds of angles.

$849 / sony.com.sg





FOOD

There's a big difference between a hastily snapped munchstagram and a beautifully posed Instalicious. Here's how to take genuinely tasty pictures of your meals.

1 Be original

Food snaps are the third most popular thing to share on social media. There are already several billion top-down shots of food on white plates on Instagram and Pinterest, so pick interesting angles and subjects and you'll stand out. If you're cooking at home, a shot of the meal being made or even a single ingredient can tell a story more effectively than a plated-up dish. If you're in a restaurant, try getting right up close so the plate more than fills your picture, or set your phone at table level for a profile shot of the dish. Concentrate on making a good picture rather than clearly showing what you're eating (you could try shooting through your water glass, for example) and people might

forgive you for tweeting pictures of your dinner.

2 Turn that flash off

Any phone flash will create reflections and glare; ideally you want light coming from the side, as most food is flat or flattish, so angled light picks out details. The warm colour of indirect sunlight suits most food well, so try shooting near a window, just out of direct sunlight – again, this is easier to do at home.

3 Clean up your background

Remove clutter, use plates or boards with plain or very simple textures and wipe any unwanted splats from your plates – just like they do on *Masterchef*.

4 Take a slice

You're justifiably proud of your multi-meat enormo-pie or your multi-layered megacake, so make sure you show off what's inside. Use a very sharp knife for a clean edge but don't worry if a few crumbs fall off, as they'll make for a more natural-looking situation.

5 If all else fails, put an egg on it

A poached egg, freshly cut so it oozes yolk onto the food below, is one of the most overused clichés in food photography, but it looks tasty. Other lip-smackin' techniques employed by culinary stylists include a sprinkling of large salt flakes or a daub of sauce applied with a paintbrush, but some clichés are to be avoided: never photograph your coffee, and a Jenga-tower of chunky chips looks a bit Beefeater if you ask us.

FOLLOW THESE...

INSPIRING INSTAGRAM ACCOUNTS

@chefjacques lamerde
This anonymous account takes junk food apart and reassembles it into plates that look like haute cuisine.

@oreo
Taking one biscuit and creating so many interesting images from it is an achievement. One of the most followed food brands on Instagram.

...AND TRY THIS

SLOW FOOD WITH A TRIPOD

A pro food photographer typically uses two or three very powerful lights, but a useful workaround is to use a tripod and a low shutter speed to get lots of light into the camera. This way you can still use a couple of light sources without needing a full professional studio setup to make your photographs delicious.

[**Photography** Michael Stern, Agustin Nieto, Alexandra E Rust]

JONPAUL DOUGLASS

PRO PHOTOGRAPHER

Because there are enough pictures of food on plates to last us for a millennium, Jonpaul Douglass documents the movements of pepperoni pizzas. His imaginative *Pizza In The Wild* series (you can buy prints at the link below) gives these cheesediscs a new life, sneaking down stairways, climbing fences, sunbathing, and being menaced by their top predator, the pug.

society6.com/jonpauldouglass

MY BEST SHOT

MY BEST SHOT

BENJAMIN LEE

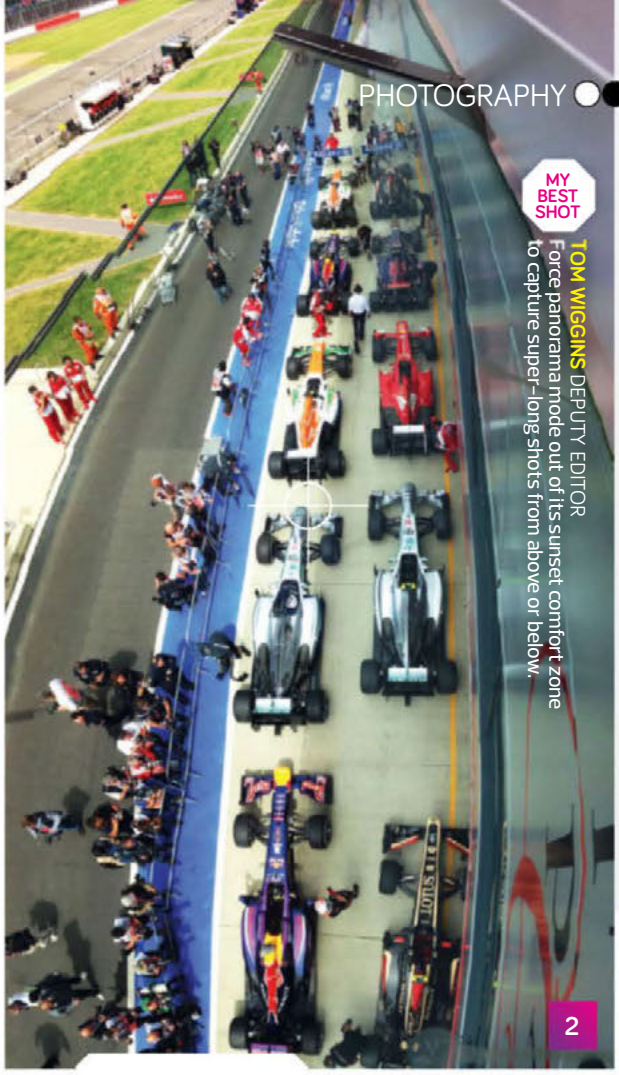
PHOTOGRAPHER

I've often driven past this overpass and noticed how nice the light is at certain times of the day.

I positioned a friend in the light, which illuminated his face without turning him into a silhouette. It was shot using burst mode on a Fujifilm X-Pro1, then edited on an iPhone 6 Plus.

First I used Touch Retouch to remove some pieces of rubbish, then I imported it into VSCOcam to add the J5 filter.

itchban.com
eyeem.com



MY BEST SHOT

TOM WIGGINS DEPUTY EDITOR

Force panorama mode out of its sunset comfort zone to capture super-long shots from above or below.

SPORT

You can bluff your way through a lot of photography, but with sport, both your tech and your technique have to put in a great performance to get the best results.

1 Light and speed

Light, and lots of it, is vital in sports photography. If you don't get enough light through the lens and onto the sensor, you'll have to drop the shutter speed so low that any moving object becomes a blur. Zooming in with a telephoto lens reduces the amount of light even further. Higher ISO settings help, but there's a limit to how far you can push the ISO before image quality becomes an issue. Bigger lenses gather more light and bigger sensors capture more of that, so a DSLR with a full-frame sensor is the way to go.

2 Test shots

Before the main event, take some practice shots during the warm-up. Try a few positions and see which work best. If you're in a rush you can fall back on a 'sport' setting, but otherwise go manual and experiment to find a balance between shutter speed, ISO and aperture that's enough to freeze the action without underexposing the image or introducing too much low-ISO fuzziness. Have a close-up look at your test shots on the LCD before you settle on the final numbers, so when the action starts you can shoot with confidence.

3 Motion blur

Blur can be used to convey movement, and it's easily done even with a cheap compact. Using a slower shutter speed, you can freeze part of the image and blur another. One option is to track and pan with your subject and shoot while the camera is moving horizontally, which will freeze the subject and blur the background. Another is to keep the camera fixed and shoot as your subject passes, which gives the opposite effect. You can even use a zoom lens to add an explosive motion blur effect by pressing the shutter as you zoom in or out.

4 Burst montage

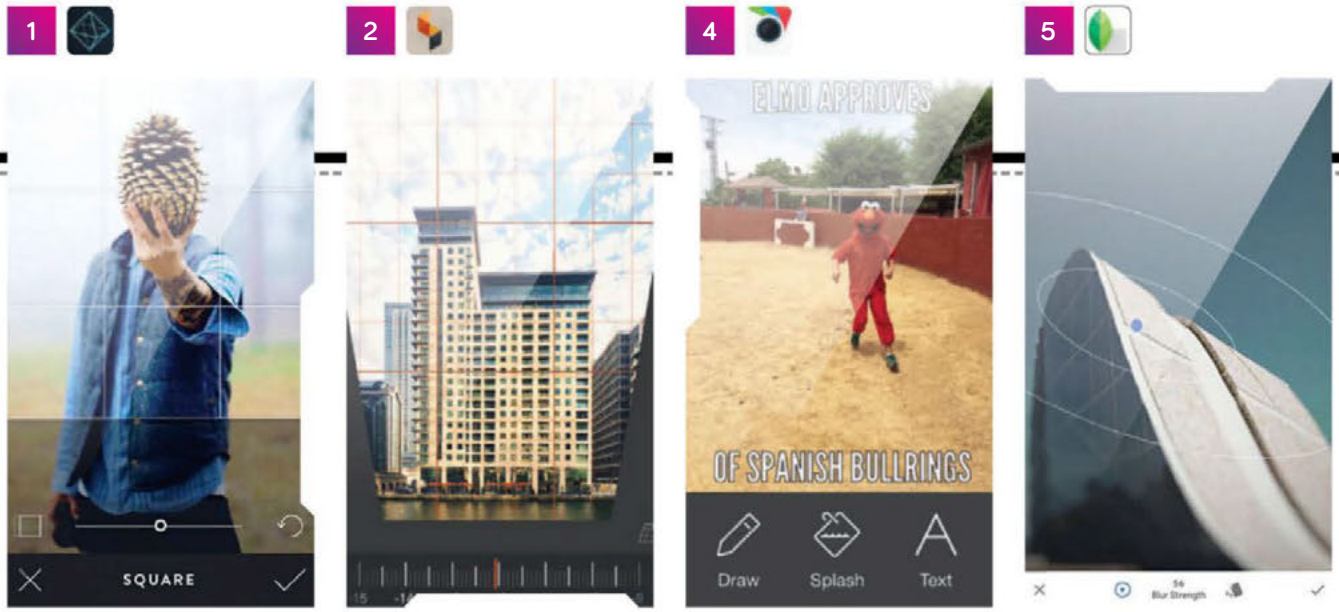
Use your smartphone or camera's burst mode to take a sequence of pictures in quick succession. Mount your snapper on a tripod, then shoot as your subject jumps, dives, skis, skates or flies across the frame. Using an image editor such as Photoshop or GIMP, you can then create a single frame composite (to show an entire movement, trick or stunt) by layering up the shots and 'rubbing through' each frame of your subject's animation.

NOW ADD THIS...

NIKON D750
The full-frame sensor of the D750 welcomes light with open arms from whatever lens you choose to pair it with. Indoors or under floodlights, you'll be glad of the surprisingly clean 12,800 maximum ISO sensitivity, and in brighter conditions you'll find its 51-point continuous autofocus keeps pace with the swiftest athletes. **$3079 / nikon.com.sg**

...OR TRY THIS

Your discreet little phone has its strengths, so work with them. Use it at events to get behind-the-scenes snaps, crowd shots, panoramas and close-ups of features around the venue. Set up your phone just behind the goal at a football game or at a good vantage point at a racetrack, and then shoot using a Bluetooth remote such as the **Muku Shuttr US$40($55), mukulabs.com.**



EDITING

Editing digital photos is a big part of any proper photographer's job. Fortunately, there's a large number of apps waiting to help you get it done, and get it right.

1 Get a vintage look
LITELY

A subtle alternative to hyper-processed filters, this app (made by an ex-Instagram travel photographer) has a range of presets inspired by cinematic tones. You get 11 themes for free, with themed 'boxes' of extras available from 79p each. If it's desktop editing you're after, Lately also offers presets for Lightroom and Photoshop.
$free / iOS

2 Fix your distortion
SKWRT

Wide-angle smartphone lenses can be forgiving in some situations, but they can also introduce a strange warping effect known as perspective distortion. Here to iron out your wonky lines is this app, which lets you tweak your image on its vertical and horizontal planes and fix the horizon, all via a simple dial control. It won't save a badly framed shot, but it can work some real magic on fisheye photos.
$2.58 / iOS

3 Design a new wallpaper
FRAGMENT

If filters are smartphone photography's pale ale, Fragment is its magic mushrooms. Here to turn traditional landscapes into 'prismatic art', it lets you select from a range of frames, shapes and patterns. These then slice your photo up into a kaleidoscopic pattern that ensure it ends up resembling a Tame Impala album cover.
from $2.58 / Android, iOS

4 Make a meme
AVIARY PHOTO EDITOR

If your photo has the makings of the next confession bear, grumpy cat or hapless hippo (OK, we made that one up), this app provides a quick and dirty way to slap text on top in the classic 'Impact' font. It's also home to other effects such as stickers and overlays, though for 'rage face' stickers check out Rage Comics Photo Editor (£free, Android).
$free / Android, iOS

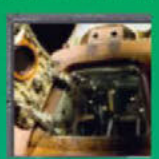
5 Tweak your tones (by hand)
SNAPSEED

This Google-owned app was one of the first to let you edit specific areas of a photo, and its 'selective adjustment' feature remains an intuitive alternative to using curves or layers. Press on the area you'd like to tweak and you'll be able to change the contrast, saturation and brightness. Its filters aren't the best, but it's a fine companion to Google Photos.
$free / Android, iOS

PLUSH PLUGINS

If you want more than an Instagram filter, check out these editing extras

TOPAZ LABS



Don't want to be faffing around with layers and brush opacities? These plugins for Photoshop will level up your snaps with minimum fuss. Options range from 'Black and white effects' to 'DeNoise' for cleaning up photos taken at high ISOs.
from US$30($41) / topazlabs.com

NIK COLLECTION

This bargain set of photo-pimping plugins contains a varied mix of seven effects, from an HDR editor to 'Analog Efex Pro' for mimicking classic cameras that can now only be found in museums or fetching four figures on eBay.
$189 / google.com/nikcollection

IMAGENOMIC NOISEWARE

Are your photos noisier than a hyena with a megaphone? This uses a speedy but effective noise-suppressing algorithm to sharpen previously cloudy images without losing detail or creating an unnatural look.
US$80($110) / imagenomic.com

6 Do a batch edit
VSCO CAM

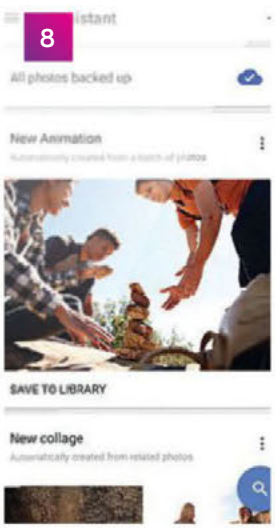
If you've taken a series of photos from the same trip, you'll probably want to give them a uniform style. A recent update to this excellent camera and editing app gives you the ability to apply the same edit to a group of photos in its library view, saving you from going into each one individually and choosing the same filter.
$free / Android, iOS

7 Tweak your tones (using curves)
DARKROOM

Curve adjustments allowing you to tweak the colour balance of specific areas of an image are now available to iPhonographers in this elegant app. The $3.98 in-app purchase lets you adjust midtones and highlights across the RGB spectrum, and you can make your own filters. For a similar range of tools, Android fans should try PhotoDirector (£free).
$free / iOS

8 Outsource your editing
GOOGLE PHOTOS

Editing all those pictures can be a time-consuming



palaver. If you'd rather your cloud storage knocked up storybooks and animated GIFs for you, sign up to this new Google service. Its 'Photos Assistant' leafs through your snaps and suggests new collages and edits to add to your library. It won't automatically apply Google's old 'auto-awesome feature', but a one-touch editing option can be found beneath the pencil icon.
$free / Android, iOS

9 Edit RAW files
FILTERSTORM NEUE

The closest thing to stuffing full-fat desktop Photoshop in your pocket, this powerful app lets you work on uncompressed RAW files on the train home. Along with the ability to edit full-resolution DSLR snaps, pro snappers will be pleased to discover it includes features such as layers, masks and clone stamping, all via an interface that is surprisingly touch-friendly. It comes bundled with an 'auto-smug' sensation as standard.
$4.58 / iOS

10 Get a better face
FACETUNE

The old maxim about passport photos (if you look anything like yours, you're too ill to travel) could be applied to most of our selfies. Luckily, this retouching app takes us from haggard to handsome in a few minutes by removing imperfections and even refining jaw lines. Don't go overboard, though, or you'll end up looking like an extra from Soundgarden's *Black Hole Sun* video.
$4.58 / Android, iOS

FINISHING TOUCHES

Give your photos a better life in a book, wooden canvas or art gallery...

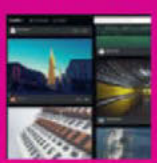
IMMORTALISE YOUR INSTAS
CHEERZ

A printing service for social media snaps, Cheerz has most formats covered, including magnets and books. There's also the 'polabox', a pack of your finest photos in Polaroid form.
cheerz.com

GIVE YOUR PICTURES WOOD
WOODPIC

Choose your preferred size of plywood canvas (up to 40in x 30in for £300) and this Kent-based company will print your photo directly onto it. We like its 'multi-panel' option for splitting a single photo between several canvases.
woodpic.co.uk

CASH IN YOUR SNAPS
EYEEM



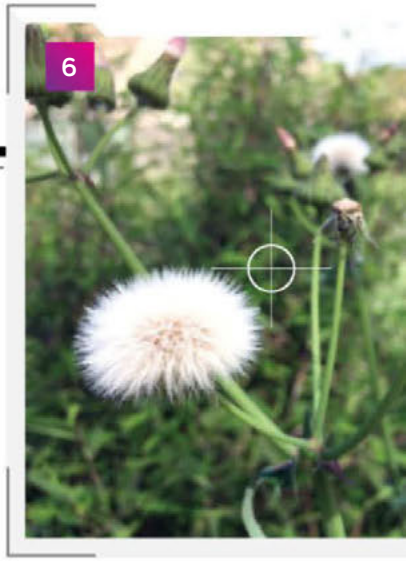
It's not the only photo marketplace (check out 500px and Foap), but EyeEm is the most versatile. Its best feature is 'Missions' – competitions set by magazines, companies and galleries.
eyeem.com

6

7

9

10



WHICH PHONE

WHAT WE TESTED

HTC One M9 $1008 / htc.com/sea

Samsung Galaxy S6
$998 / samsung.com/sg

Apple iPhone 6 Plus
from$1148 / apple.com/sg

LG G4 $998/ lg.com/sg

Apple iPhone 6
from $988 / apple.com/sg

We took five of the latest and greatest superphones and tested them for their photographic prowess. Then, we posted the pictures on Stuff.tv and asked you to pick your favourites – without knowing which phones took which pictures. Do your results match ours?

1 COLOUR ME GOOD

More important than megapixels is whether the colours are right, or if photos have an unnatural colour cast. Apple's iPhones absolutely nail this one. Colour and white balance are dead-on, every time. The Samsung Galaxy S6 is almost as good, with natural-looking shots 24/7.

The LG G4 is excellent as well, but despite a dedicated colour sensor on its back, its shots can be a little unnatural – not unrealistic, just slightly too warm. In fact this can make for nicer pictures, depending on the subject.

The HTC One M9 is the only phone that gave us any trouble with white balance and colour. Its shots generally look very warm, and this can really work for some scenes, but when you take a closer look in an editing app some weird greenish shadows become evident.

2 THE BRIGHT STUFF

Photography is all about how much light gets into the camera, so a phone that gets its exposure right will deliver the pictures you want. The iPhones offer a clever in-built HDR (high dynamic range) function, and from our shots at least, they seem pretty much immune to overexposure. The Samsung is great too, although it can occasionally push the exposure too much, causing slight whiting-out of highlight detail.

The LG is also good, but it can over-compensate in low light, leaving some shots looking a little washed out. Once again, it's the HTC that has the biggest problems, with wide variations in exposure and a tendency to white-out skies.

3 DETAILS, DETAILS

Megapixels don't really matter when you're viewing photos on a screen – an 8MP photo will pretty much fill a 4K TV screen at 100% – but they do affect the size you can use pictures at in prints and books.

The LG's photos are the sharpest, but thanks to that enthusiastic processor they can appear sharpened. Just behind it is the Samsung, then the HTC.

It's here that we see the iPhones losing out, with half the resolution of the other cameras. While they make great use of the megapixels they have, it's when you open a picture in Photoshop that you find the pixels aren't there to zoom in on part of an image as you can with the larger pictures from the Androids.

4 YOU ARE WHAT YOU HDR

Dynamic range isn't something you hear a lot about in adverts – it's not as easy to explain as megapixels – but it's one of the most important factors in image quality. Basically, it's how well the camera handles shadows and highlights to give a balanced image, and the spec to look at is the

CAMERA IS THE BEST?

size of the sensor pixels. The iPhone 6 and 6 Plus have 1.5micron pixels, while all the Android phones are smaller at 1.1micron. Bigger pixels pick up more light for each dot in the image.

However, hardware is only half the story: the Auto HDR modes you'll see in the iPhones, the Galaxy S6 and the G4 alike all offer dynamic range improvement without a big performance hit. The Galaxy S6 seems to be the best at juggling extremes of bright and dark, but some shots look over-processed; the iPhones have a more natural approach.

The HTC has by far the most effective HDR. Again, it's so effective that some images can look unnatural when really pushed, but it only goes to that degree when the scene demands it. It's fiddly to turn on and off, but it can pull off some tricks.

5 EMBRACE THE DARKNESS

Lower light is an area where every phone camera struggles due to their small sensors, but increasingly the solution is optical image stabilisation (OIS). Basically, this means the lens can move a bit to compensate for wobbles and shakes, reducing blur. Three of these phones – the iPhone 6 Plus, the Galaxy S6 and the LG G4 – have OIS; the others don't.

Sure enough, these three perform far better in low light. The iPhone 6 Plus deserves special mention, allowing for exposures of 1/4 of a second without blur, where the Samsung Galaxy S6 and LG G4 only dare to use 1/9s or 1/10s exposures. However, the resulting images from the LG and Samsung are actually just as good, if not better. The iPhone 6 offers decent pictures in murky conditions, leaving the HTC as the only phone that stumbles here.

6 SWEAT THE SMALL STUFF

Phones are not really designed for macro photography; their lenses are generally a bit too wide-angle, and getting them to focus on a small, close-by object can be tricky. This is where megapixels come in handy, giving you the ability to crop in on an image without sacrificing much detail.

The HTC has plenty of pixels, but at close crop the images are a little soft; again, the G4 and S6 lead the field. Both have their own benefits: the S6's autofocus seems to be better at hooking onto tricky targets than the G4's, but then the G4 has manual focusing so you can fiddle about with that stuff yourself.

7 NARCISSIST CORNER

Selfies may be idiotic, but they sure are popular. The HTC has the most impressive hardware here, using a big UltraPixel sensor for the face-cam. The results can be great, but a fixed-focus lens means it has to be held at full arm's length to get a sharp image – try to actually frame just your own face in the scene and it'll be pretty blurry. This is a real shame, because in many of the low-light situations where a selfie might seem like a plan, the M9's selfie-cam can deliver great shots.

The others are more pedestrian. The LG has lots of megapixels but quite ugly processing in lower lighting and anaemic-looking colours. Low resolution in the iPhones means that, while they offer good colour fidelity, they're always going to look scrappy.

VERDICT

While the HTC One M9 and the iPhone 6 clearly haven't won this contest, picking a winner from the other three is a lot harder. The LG and Samsung are superior for fine detail, so if you're planning on printing a lot then these are the ones to consider. That said, the 6 Plus's colour and exposure are pretty much flawless, which will give it the edge for photographers who prefer a natural look.

At the other end of the scale, the LG's processed shots will appeal to anyone who doesn't like editing. All three are winners, really, but the Samsung Galaxy S6 finds a happy medium between performance, flexibility and being fun to use.

YOUR VOTES

Thousands of Stuff.tv readers judged the pictures in our test without knowing which phone took which...

COLOUR
The LG G4 and iPhone 6 are joint winners.

EXPOSURE
The Galaxy S6 out-exposes the rest, with 64% of the vote.

DETAIL
The iPhone 6 just takes it with 27% of the vote, but the One M9 is a close second.

DR/HDR
The Galaxy S6 and G4 are way ahead of the rest.

LOW LIGHT
The 6 Plus takes the low-light crown, as it did in our review.

MACRO
The One M9 bags its first win, and it's a big one with 75% of the vote.

SELFIES
The G4 is a clear winner for facetime, with 71% voting for its selfie.

OUTRIGHT WINNER?
Overall, your votes agreed with our test, with the Galaxy S6 taking a narrow victory over the G4.

Stuff SINGAPORE

SMARTPHONE PHOTOGRAPHY AWARDS 2015

SUPPORTED BY:

SAMSUNG

ZALORA

GRAND HYATT SINGAPORE

PASARBELLA SINGAPORE

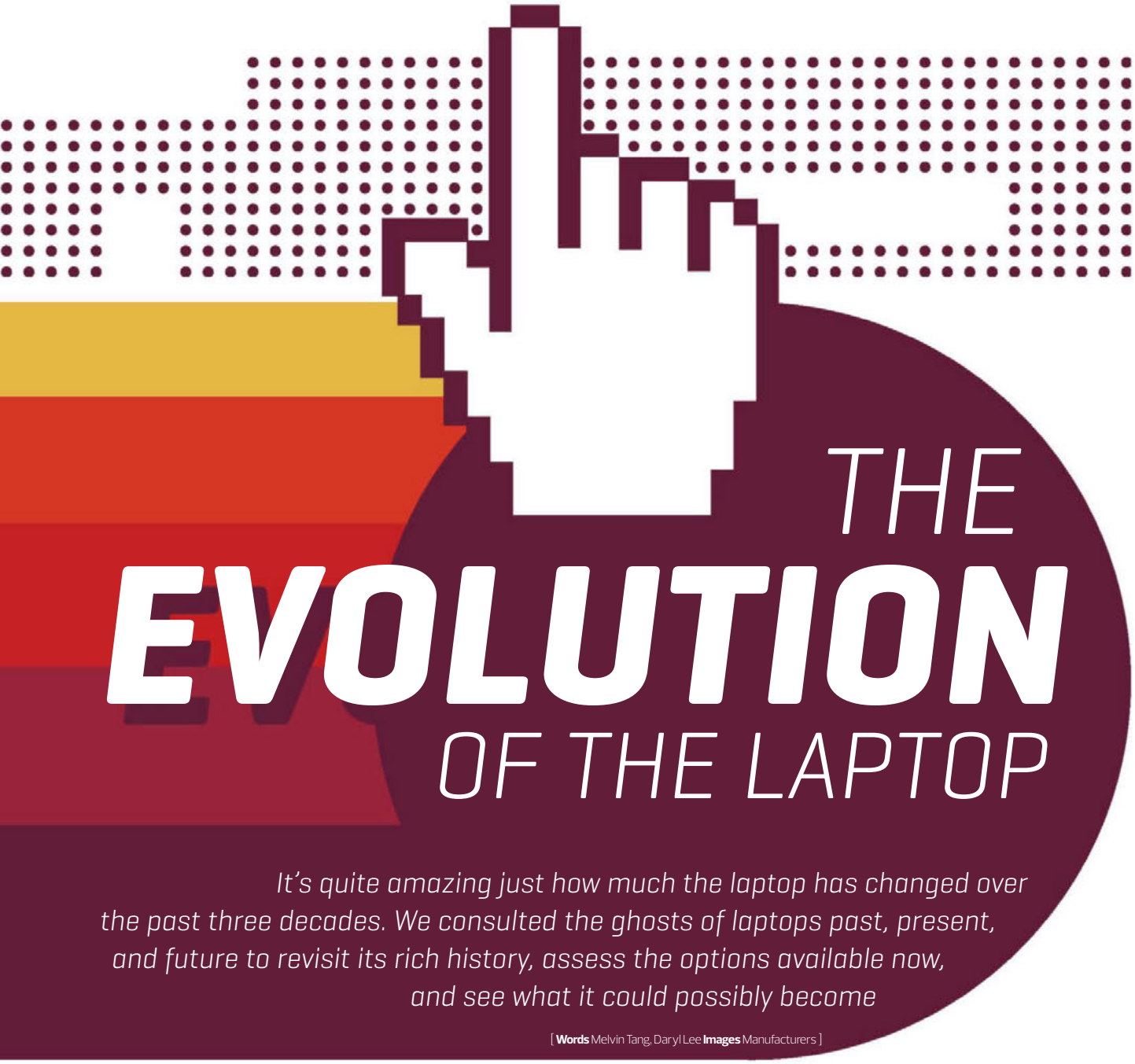
REVOLUTION COFFEE

86 居酒屋

HOOPLA COFFEE & KITCHEN

Sgbar BETA

www.stuff.tv/sg



THE EVOLUTION OF THE LAPTOP

It's quite amazing just how much the laptop has changed over the past three decades. We consulted the ghosts of laptops past, present, and future to revisit its rich history, assess the options available now, and see what it could possibly become

[**Words** Melvin Tang, Daryl Lee **Images** Manufacturers]

Besides it being SG50, 2015 also marks the 50th anniversary of Moore's Law, one of the major driving forces in the consumer electronics industry. In a nutshell, Gordon E. Moore observed in 1965 that computer processing power doubled every year, and projected that the trend would continue for the next decade, which really did sound like nuts at the time. He would then revise that timeline to every two years in 1975.

Either Moore was a techno-prophet or everyone took that as the benchmark to aim for, because his prediction has held for the past 50 years, paving the way for all the economic, technological, and societal advancements we've enjoyed to date. Kind of helps that he's a co-founder of Intel, we suppose.

We here at Stuff know all this better than anyone, since we deal almost exclusively in products brimming with power seemingly ahead of its time. Here, we'll look at laptops in particular, since personal computers have become integral to how we both work and play.

BLAST FROM THE PAST

1982 Grid Compass

What is it?

There were others before it, but the Grid Compass was the first portable computer with a clamshell design, making it the first-ever laptop in our books. You might not have heard of it before, but you've probably actually seen it in action. The sentry gun control modules in the movie Aliens were actually Grid Compasses. However, its astronomical price meant only the US military and NASA could afford to use them.

Tech specs

CPU Intel 8086 8MHz
GPU None
Display 5.25in 320x200 electroluminescent display
Memory 384K
Disk Drives None
Connectivity 1200bps modem
Dimensions 380×290×50mm
Weight 5kg
Price US$8150 ($11,205)

1986 IBM PC Convertible

What is it?

Although it's got "convertible" in its name, the IBM PC Convertible didn't turn from a laptop into a tablet, like modern ones. Instead, the display could be detached, allowing it to be connected to a regular desktop monitor. It was IBM's first PC that could be battery powered, and to have 3.5" floppy drives. Users could also attach a range of optional modules to it, such as a modem or a printer.

Tech specs

CPU Intel 80C88 4.77MHz
GPU None
Display 10in 640x200 monochrome CGA-compatible LCD
Memory 256K RAM
Disk Drives 2 x 3.5" floppy
Connectivity Optional
Dimensions 360x310x67mm
Weight 5.8kg
Price US$2000 ($2750)

1988 NEC Ultralite PC-17-02

What is it?

It was the world's first notebook computer, so named because the display could be closed over the rest of the unit and carried around like an actual notebook. Who knew a computer masquerading as a paper product was what people wanted? It was also the first laptop to use lithium-ion batteries, and was much smaller than all previous portable computers before it at just 2kg. That's almost the same weight as some laptops we see today.

Tech specs

CPU NEC V30 at 9.83MHz
GPU None
Display 9.3in 640x200 CGA compatible
Memory 2MB HD, 640K RAM
Disk Drives None
Connectivity 2400bps modem
Dimensions 298x210x32mm
Weight 2kg
Price US$3699 ($5085)

1988 Compaq SLT/286

What is it?

Hot on the heels of the Ultralite was the Compaq SLT/286, which finally introduced the world to a laptop that wasn't just battery powered, but also had an internal hard drive, VGA LCD screen, and a detachable keyboard. That means it was the first laptop that could display images, albeit not in colour. It might not have been pretty or dainty, but for a portable PC, it sure was powerful.

Tech specs

CPU Intel 80C286 12MHz
GPU None
Display 10in 640x480 VGA LCD
Memory 20MB HD, 640K RAM
Disk Drives 1 x 3.5" floppy
Connectivity Optional
Dimensions 340x216x102mm
Weight 6.35kg
Price US$5399 ($7420)

FAST FORWARD

1993

Intel launches the Pentium processor, laying the foundation for all of their future processors to date.
Just like Moore predicted, processor speeds and energy consumption levels soon improve drastically, leading to more power, smaller chips, and longer battery life.

1995

Microsoft bequeaths the gift of Windows 95 upon us. Besides being one of the best OSes ever, Windows 95 gives laptops way better battery life.
We also meet USB 1.0, greatly opening the scope for PC accessories, but without the necessary Windows compatibility to fulfil its potential.

1999

The WiFi consortium is formed, and creates the wireless standards that laptop makers use to give their PCs Wireless internet connectivity.
Nvidia also launches the GeForce 256, which they call the world's first Graphics Processing Unit (GPU), giving PCs the ability to render better visuals.

1991 Apple Powerbook 100

What is it?

You knew Apple was bound to pop up sooner or later, given its current domination in the laptop space. As expected, it was due to a breakthrough in design – the first Apple Powerbook gave the world a new clamshell design including a space to rest your palms, of all things, and a built-in pointing device in the form of a trackball. Both of which have become standard design elements still seen now, which is testament to how groundbreaking it was.

Tech specs

CPU Motorola 68000 16MHz
GPU None
Display 9in 640x400 monochrome passive matrix LCD
Memory 20MB HD, 2MB RAM
Disk Drives Optional
Connectivity Optional
Dimensions 220x280x46mm
Weight 2.31kg
Price US$2300 ($3160)

1992 IBM Thinkpad 700C

What is it?

Hot on the heels of Apple's revolutionary Powerbook 100, IBM launched the Thinkpad 700C. It was largely similar in terms of looks, but came with one instantly recognisable addition – the red trackpoint nub that you can still find today on the now-Lenovo Thinkpads. Another notable feature was the world's first TFT display,literally brightening the laptop world with the entire visual dimension of colour.

Tech specs

CPU Intel 80486 SLC 25MHz
GPU None
Display 10.4in 640x480 VGA TFT LCD
Memory 120MB HD, 4MB RAM
Disk Drives 1 x 3.5" floppy
Connectivity Optional
Dimensions 297x210x56mm
Weight 3.45kg
Price US$4350 ($5980)

2002 HP Compaq Tablet PC TC1000

What is it?

2002 was the year we first saw convertible tablet PCs which turned from tablets to laptops, meaning 2-in-1s have been around longer than most people think. This was a result of Microsoft's Tablet PC initiative, which pushed for pen-enabled PCs equipped with the Windows XP Tablet OS. One such PC was the HP Compaq Tablet PC TC1000, and though it and its companions might not have taken off, they sure did pave the way.

Tech specs

CPU Transmeta Crusoe TM5800 1GHz
GPU Nvidia GeForce2 Go 64MB
Display 10.4in 1024x768 XGA TFT LCD
Memory 30GB HD, 256MB RAM
Disk Drives DVD-ROM Drive
Connectivity 2 x USB 2.0, 802.11b WiFi, 10/100 Ethernet
Dimensions 274x216x20.3mm
Weight 6.35kg
Price US$2149 ($2955)

2007 Asus EEE PC 701

What is it?

It's the result of Asus taking a chance on launching a new breed of laptop that was built primarily for web surfing – which is way cooler than plain "browsing". The EEE PC 701 was small, light, and best of all, cheap, pioneering a new wave of similar laptops to hit the market. Intel even took note of this new wave of devices and dubbed them "Netbooks", which was quite clever on their part.

Tech specs

CPU Intel Celeron-M 900MHz
GPU Intel GMA 900
Display 7in 800x480 WVGA TFT LCD
Memory 4GB SSD, 512MB RAM
Disk Drives None
Connectivity 3 x USB 2.0, 802.11b/g WiFi, 10/100 Ethernet
Dimensions 225x165x35mm
Weight 0.92kg
Price US$399 ($550)

BLAST FROM THE PAST

2011
Acer Aspire S3

What is it?

The PC world's answer to the MacBook Air. The Acer Aspire S3 was the first in a new category of laptops called Ultrabooks, an initiative spearheaded by Intel putting portability forward as the main feature in an effort to wrest laptop market share back from Apple. Ultrabooks have since evolved to become the de facto standard for laptops now, bringing us closer to the place Netbooks first set us on the path towards.

Tech specs

CPU Intel Core i5 1.6 GHz
GPU Intel HD Graphics 3000
Display 13.3in 1366x768 LCD
Memory 320GB HD, 20GB SSD, 4GB RAM
Disk Drives None
Connectivity 2 x USB 2.0, 802.11 b/g/n WiFi, Bluetooth 4.0
Dimensions 323x218x17.8mm
Weight 1.4kg
Price US$899 ($1235)

2008
MacBook Air

What is it?

Apple will never admit it, but they made the ultimate netbook with the arrival of the first MacBook Air, and in typical Apple fashion, turned the industry on its head as the world's thinnest notebook. Who could forget the moment Steve Jobs unveiled it by taking it out of a business envelope? While it was criticised in the beginning for its many shortcomings when first launched, Apple has since fixed all that, leading to the MacBook Air being the #1 laptop in our fabled Top Tens for several years now.

Tech specs

CPU Intel Core 2 Duo 1.6 GHz
GPU Intel GMA X3100
Display 13.3in 1280x800 TFT LED
Memory 80GB HD, 2GB RAM
Disk Drives None
Connectivity 1 x USB 2.0, 802.11a/b/g/n WiFi, Bluetooth 2.1
Dimensions 325x227x19.3mm
Weight 1.36kg
Price US$1799 ($2470)

WE VALUE YOUR INPUT

Trackball

The first built-in pointing device on a laptop was a trackball on Apple's PowerBook 100 way back in 1991. Prior to that, laptops only had text input, which was very limiting. If you've ever used a trackball, you'll find that they're more ergonomic, but not the most precise when it comes to operation.

Trackpoint

IBM's new ThinkPads in 1992 came with their now-signature red Trackpoint pointing sticks. It wasn't very easy to use, but it did mean a smaller laptop that could be used without a mouse. More often than not, you'll miss what you want to click with the cursor, so smaller icons can be quite a challenge.

Touchpad

Apple introduced touchpads to laptops on their new PowerBooks in 1994. More accurate and intuitive than trackballs and pointing sticks, they're still being used now, having been upgraded with multitouch and gesture controls. Again, it was Apple which introduced these features to make usage easier.

Pen

Microsoft's Tablet PC initiative in 2002 introduced Pen input to the mainstream consciousness, and though it didn't really take off back then, Microsoft's recent Surface efforts have done much better. Pens are almost as easy to use as your finger, and give you much more precise control while drawing or writing, which can be pretty useful.

Multitouch display

After Apple's iPhones brought touch displays into the limelight with its iPhones, Microsoft soon moved to implement them in PCs and laptops with the introduction of Windows 7 in 2009. It's probably a feature more suited to smartphones and tablets though, as holding out your arm for long periods of time to touch a laptop display isn't the most feasible.

Force Touch

Apple's done it again in 2015 with their constant drive to make device usage more intuitive. Force Touch doesn't just sound Jedi-like and cool, it makes touchpads on new MacBooks pretty amazing, simulating different clicks using haptic feedback and the new Taptic Engine. They can even detect how hard you're pressing for added levels of interaction.

Laptops have come so far that they now come in several subcategories, which can get a little confusing. We've highlighted today's main options for you to find just the right personal computer for yourself

FOR WORK

It says a lot that Ultrabooks have become the de facto standard for laptops nowadays. Practically all current laptops worth getting are slim, light, and packed with power, making them perfect for general use – which we all know means entertainment.

Whether you're browsing for cat pictures, watching inane videos of cats meeting dogs for the first time, streaming music from Spotify, or playing Candy Crush, an Ultrabook takes care of all your needs, and is portable enough to be taken everywhere you go too. Oh, and if you need to do a little bit of work, they're more than sufficient to check emails and run MS Office. The best part? They're quite affordable compared to the prices we used to have to pay for them just a few years ago, at around $1500 on average for a decent model. You could go even cheaper and get something clunkier, but if you do that, you're no *Stuff* reader.

5 things we love about Ultrabooks

Given these reasons, you'd be silly not to.

They're light:
Because who likes dragging around a sackful of bricks? One of the best things about ultrabooks is how light they are. Many weigh in the region of one kilogram, which isn't too far off that of a tablet... or your friend with that eating disorder.

They're juiced up:
All that power and lightness would be useless if you had to be chained to a power supply, but most ultrabooks will last you at least six hours on a full charge. Of course, your mileage will vary, but as long as you're fairly mindful of how you use it, there's a good chance your ultrabook's battery will last you a full day out.

They're light (on compromises):
Remember the days when getting a ultra-portable laptop meant you'll have to scrimp on features? Well, with ultrabooks, that's certainly not the case. An ultrabook is aptly named because it combines a reasonably quick processor with decent battery life and because they generally use SSDs, they fire up your favourite apps in a suitably rapid fashion.

They're really useful:
A tablet is great for whiling time away on the train watching cat videos on YouTube, but they're not really good when it comes to doing some work on, unlike with ultrabooks. For starters, while you could always stick a keyboard on a tablet, its OS architecture means you won't have access to a full-fledged email client or word processor.

They're affordable:
Yes, ultrabooks aren't the cheapest ultra-portables around, Chromebooks are, but if you can't live with the compromises imposed by Chromebooks, an ultrabook is the (only) way to go. And while an ultrabook would never be called bargain basement by any stretch of the imagination, they're definitely not bank-busting, either.

NOW GET THESE

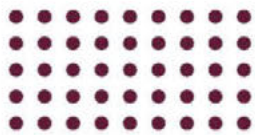
Asus ZenBook Pro UX501

What is it?

If nothing else than top-of-the-line is good enough for you, the Asus ZenBook Pro UX501 both fits the bill and has the bill to match. While it will set you back a princely S$2,200, the fact that it's the first Ultrabook to sport a 15.6in Ultra High Definition display means you'll be able to watch movies in pixel-perfect precision.

Tech specs

CPU Intel Core i7 2.6GHz
GPU Nvidia GeForce GTX 960M 2GB
Display 15.6in 3840x2160 IPS LED
Memory 1TB HD, 128GB SSD, 4GB RAM
Disk Drives None
Connectivity 3 x USB 3.0, 1 x HDMI, 802.11b/g/n/ac WiFi, Bluetooth 4.0
Dimensions 383x255x21.3mm
Weight 2.06kg
Price from S$2198 / Asus.com/sg



Lenovo Yoga 500

What is it?

It's not just versatile with what you can use it for – with a keyboard that can flip all the way to the back of the laptop, the Yoga is also flexible enough to be used in several different ways. You can prop it up like a tent, tap on it like a tablet, stand it so the screen is in front, or go the conventional route.

Tech specs

CPU Intel Core i5 2.2GHz
GPU NVIDIA GeForce GT 940M 2GB
Display 14in 1920x1080 IPS LED
Memory 1TB HD, 8GB RAM
Disk Drives None
Connectivity 2 x USB 3.0, 1 x USB 2.0, 1 x HDMI, 802.11b/g/n/ac WiFi, Bluetooth 4.0
Dimensions 340x235x21.5mm
Weight 1.8kg
Price from S$1299 / lenovo.com/sg

LAPTOP OF THE FUTURE

Apple melds the portability of a MacBook Air with the screen of a MacBook Pro... there might be some compromises, but you're still going to want one

from $1788 / apple.com/sg

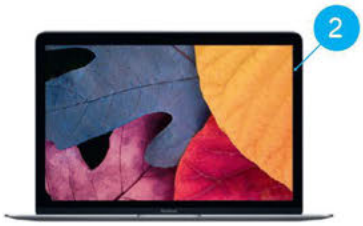
It may not be ready to replace the Pro or Air versions just yet, but the design of the MacBook 12in makes everything else look plain old. It packs in a beautiful Retina display despite being smaller than the already tiny 11in Air, and at 920g it's even lighter.

It uses one of Intel's new Core M processors and, as a result, isn't quite as powerful as an Air or Pro, but unless you're doing some serious processor-straining you won't notice. It has a nine-hour battery life and can even handle recent games if you tweak the graphics settings.

Is this the perfect laptop? No, there's certainly room for improvement. Aside from the headphone socket there's just one connector: it's a new USB-C port, and it doubles as the power socket. Want to plug in a mouse? You'll need an adapter. Ditto for an external display.

The keyboard is shallower too; it's crisp as a frosty morning but takes some getting used to. Can you live with these little niggles? Yes, of course you can.

1 Sounds bigger than it looks
The MacBook 12in has amazing new speakers, with a grille that sits just above the keyboard. This laptop may be tiny but it sounds bigger than even the chunkier Pro versions. Your tunes sound like they're expanding out way beyond the laptop's sides. Impressive stuff.

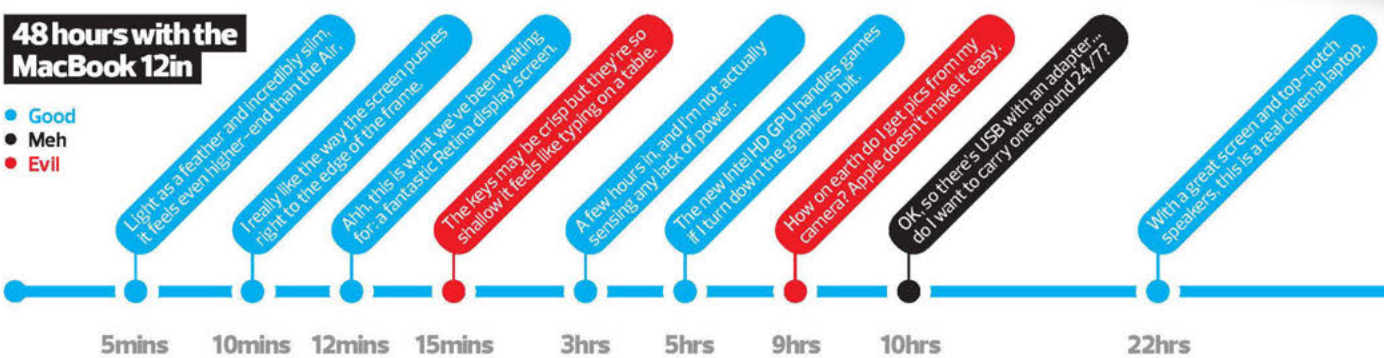


2 Telly-topping Retina
A 12in screen of 2304x1440 pixels is sharp enough to earn Apple's Retina display badge. This is one seriously nice screen. Almost every aspect is top-notch: colour, contrast and top brightness. There's a good chance it's even more pixel-packed than your TV.

3 Futurific trackpad
The keyboard and trackpad both have a new-for-2015 design. This is the only MacBook to get the ultra-crisp slimline keyboard, while the trackpad is pressure-sensitive. Press harder and you get a secondary deep 'click' that unlocks new features in apps. It's a true next-gen trackpad.

48 hours with the MacBook 12in

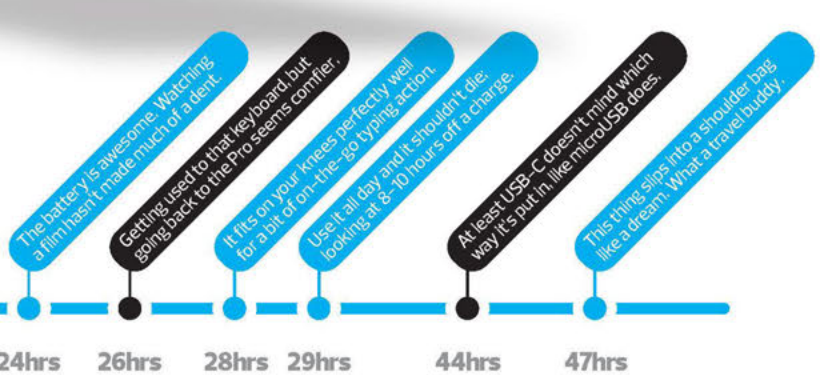
- Good
- Meh
- Evil



[Words Tom Parsons]

4 Lost connection
So how do you deal with a laptop with no connections? It's not straightforward, but you can get a USB-C to USB adapter for $28. This'll let you plug in a mouse, a USB card reader, whatever you like. Get a USB hub involved and you'll be completely sorted.

5 It matches my phone
Unlike previous MacBooks, the MacBook 12in comes in three colours, not just 'naked' silvery aluminium. You get no points for guessing the inspiration of the grey and gold versions you now have to agonise over – these are exactly the same colour options as the iPhone 6.



Tech specs

Screen 12in IPS LCD, 2304x1440
CPU Intel Core M 1.1GHz **GPU** Intel HD 5300
OS Mac OS X **Storage** 256GB or 512GB SSD
RAM 8GB **Connectivity** Wi-Fi 802.11ac, USB-C
Dimensions 280x196x13mm **Weight** 920g

Going deeper underground

Don't let its clean, smooth looks deceive you... there's a lot more going on beneath the surface

Butterfly buttons

Under those keyboard keys is a new mechanism. Rather than a scissor, it's butterfly-shaped so that the keys don't wiggle. They may be shallow but they're some of the most secure laptop keys ever.

Battery-packed

Open up a MacBook and you'll see it's a technical marvel. The logic board is absolutely tiny, letting Apple fill the casing almost entirely with battery. It's stacked up in thin layers letting it fill every nook.

USB Power

Meet USB-C. This is the future of USB. It can take up to 100W of power, letting it double as the power socket. Most importantly, though, you can insert it either way round. Finally.

Feel the Force

Beneath the glass Force Touch trackpad are both pressure sensors and a Taptic engine that provides the clicks that feel just like physical ones. The days of old fashioned hinge-y trackpads are over.

This is a fantastic ultraportable laptop. I'd love a little more keyboard travel, and one USB port or SD card slot would be great, but I'm prepared to live without them for everything else the MacBook does so well. If you don't feel the same, go Pro and be happy. Make no mistake – this is the laptop you buy out of want, rather than need. *@TomParsons*

STUFF SAYS ★★★★★
It's contentious and wants you to change, but this MacBook heralds a bold and bright future for laptops

THEN VS NOW

MacBook Air (1st Gen) vs MacBook (2015)

Now, we would be remiss if we didn't mention the one thing that kicked off this whole Ultrabook malarkey: the Apple MacBook Air. To be fair, ultra-portable sub-notebooks existed way before the advent of Apple's flagship ultrabook in early 2008, but as with most things to issue forth the Promised Land of Cupertino, it was the first one that was truly desirable, and for that matter, actually useful.

Prior to the MacBook Air, ultra-portables tended to have mind-numbingly slow processors, along with a screen and keyboard only fit for use by mice (the squeaking kind, not the pointing device). The MacBook Air, however, packed a decently quick 1.6GHz Intel Core 2 Duo processor, a whopping (for the time) 64GB SSD and praise be, a full-sized keyboard.

On the downside, if you wanted to get a top-end MacBook Air with the 1.8GHz chip and the aforementioned SSD, it would cost an eye-watering US$3100 ($4275). Plus, it had just a single USB port, no Ethernet jack or optical drive and to deal it the killer blow, had a battery life of a claimed five hours. Still, that got you got a laptop thinner than Kate Moss, about as light (tipping the scales at just 1.3kg) and probably just as good looking.

These days, little has changed, except for how the latest model has dropped the "Air" from its name, and how it now has more hard disk space and RAM. It still is frightfully expensive, though, with prices starting from $1788 and there's how it comes with a slower processor, specifically a 1.1GHz Intel Core M. And did we also mention it now comes in three colours, including gold and grey? Oh yes, there's that gorgeous Retina display, too.

Is it flawed? Sure, it is, as with most first-generation Apple devices (even the hardest core Apple devotee will admit the first iPhone was a bit of a dog). There's just one USB Type-C port on the entire device, which doubles as the charging port, so if you want to plug in an external hard disk, you're plumb out of luck. Either that or you'll have to shell out around $100 for a multi-port dock.

But hey, nobody said the price of progress wasn't painless.

FOR WORK

Tell us which you think you'd rather have to be more productive: a laptop that you can use anywhere, or a desktop that can only be used in one place? If you answered the latter, you probably prefer to make calls than use WhatsApp.

More and more people are using laptops as desktop replacements, thanks to the sheer portability and processing power found in business laptops nowadays. The versatility is an undeniable convenience – you could plug them into a desktop setup with keyboard, mouse, and monitor in the home or office; or you could work on-the-go from anywhere and even take it to meetings.

4 reasons to get a business laptop

So you know how to convince your office manager

You need something that can take a licking:
By their very nature, electronics are fragile. For most laptops, one good (or even not so good) drop is all it takes to take it out of commission, but some work laptops can take a licking and keep on ticking. Ruggedised to military-grade specifications, you'll be able to laugh in the face of incoming enemy fire, and that spilled cup of coffee should pose no problems at all.

You need a true desktop replacement:
While gaming laptops may have processing power in spades, they're not exactly easy to cart around, and while ultrabooks may have the portability, you certainly won't get the silicon brawn. Work laptops, however, are a perfect blend of both.

You need all-day and more battery life:
If you thought the eight-hour battery life on some ultrabooks were impressive, they have nothing on certain work laptops. Because work laptops aren't built with size as a primary consideration, this allows the fitment of larger batteries, which means some business portables will go for around ten hours or even more on a full charge.

You need security:
As a laptop meant for serious use, that is, not for frivolous activities, a work laptop needs to be secure, because the last thing you want is for your insidious competitors to go snooping around your company's profit forecasts. In addition to fingerprint sensors, some work laptops include encrypted hard drives, integrated smartcard readers, and two-factor authentication. Come to think of it, these things are also useful if you want to secure your Dear Diary entries from prying eyes.

NOW GET THESE

Lenovo ThinkPad X1 Carbon 3rd Gen

What is it?

It's got pretty much everything you'll need, with 10.9 hours of battery life, technology to recharge by 80% in just one hour, military grade toughness from its carbon fibre construction, and a fingerprint reader for biometric security. Plus, if you really want to look professional, this is the one you want.

Tech specs

CPU Intel Core i5 2.2GHz
GPU Intel HD Graphics 5500
Display 14in 1920x1080 IPS LED
Memory 128GB SSD, 4GB RAM
Disk Drives None
Connectivity 2 x USB 3.0, 1 x HDMI, 802.11 b/g/n/ac WiFi, Bluetooth 4.0
Dimensions 330x226x18.5mm
Weight 1.31kg
Price from $2499 / lenovo.com/sg

MacBook Pro with Retina Display

What is it?

If you're in the creative industries, odds are you'd prefer to carry a Mac, if not for practical reasons then aesthetic ones. Apple's new MacBook Pro with Retina Display doesn't just come with a Force Touch trackpad and searingly crisp screen for all your visual projects, but also the processing chops to put them all together.

Tech specs

CPU Intel Core i5 2.7GHz
GPU Intel Iris Graphics 6100
Display 13.3in 2560x1600 IPS LED
Memory 128GB SSD, 8GB RAM
Disk Drives None
Connectivity 2 x USB 3.0, 2 x Thunderbolt 2, 1 x HDMI, 802.11 a/b/g/n/ac WiFi, Bluetooth 4.0
Dimensions 314x219x18mm
Weight 1.58kg
Price from $1688 / apple.com/sg

THEN VS NOW

Compaq LTE (1986) vs Asus ZenBook NX500

Back in the halcyon days of computing, specifically the late 1980s, the Compaq LTE was the device to have. The LTE (most definitely not to be confused with the mobile data protocol) of 1989 weighed 2.7kg, measured 4.45cm thick and packed an 80286 processor running at a blazing 12MHz.

While this seems like the computing equivalent of Stone Age tools, at the time it was revolutionary for packing such niceties in its compact chassis as a built-in 3.5-inch floppy disk drive, a backlit screen and a three-and-a-half hour battery life. The New York Times liked it so much, it said the LTE is "leaps ahead of other machines in its class".

It did gripe about the LTE only having a grayscale display (even back then, people were grousing about screen, proving the more things change, the more they stay the same), lamenting how a VGA display would have been nice, though it did concede that it would take "a technical breakthrough to get VGA on a machine this size".

Needless to say, this paragon of yesteryear's mobile computing didn't come cheaply – if you wanted one with all the bells and whistles, in the form of a 40MB hard drive, 2MB more RAM, extra battery and 2400-baud modem, it could set you back over US$6,000, which is astronomical, even more so when inflation is factored in.

Fast forward some three decades and it appears that technical breakthrough has arrived. We scream blue murder when our work laptops don't have crystal-clear HD displays and when its batteries don't at least last eight hours.

Take the Asus Zenbook NX500, for instance. That has a Intel Core i7 chip running at 2.3GHz and a snazzy 15.6-inch Ultra-HD display. Heck, it even has touchscreen functionality, which is a far cry from the 640x200 grayscale screen on the Compaq LTE.

Of course, in 20 years time, on the 70th anniversary of Moore's Law, we'll be sneering at how backward we were back in 2015. A fully-featured portable that's not contained in a pair of virtual reality goggles? Pah!

FOR GAMING

To true gamers, sometimes a desktop just won't cut it, no matter how much powerful those can be – they need something spec-tacular that they can bring around to reflect their truly elite status. After all, there's nothing that screams "cool" more than plonking a weaponised monster laptop on the table... in their minds anyway.

True, it may be an acquired taste, but if you have to ask what makes a gaming laptop cooler than others, you'll never know. Plus, you'll be able to play anywhere – in school, at your friend's house, or if you're extreme, on the MRT. And we're not talking about things like Candy Crush either, we mean proper games like Call of Duty.

Of course, all that power also means you can do just about anything on your rig, including work, which is an added bonus.

NOW GET THESE

Razer Blade

What is it?

If you're looking for something more low key yet still maintaining high gamer cred, the Razer Blade slips in like an assassin. Looking like a cross between a full gaming rig and MacBook Pro, the new Razer Blade is practically an ultrabook with a weight of just 1.9kg despite its full arsenal, meaning it's one you could actually bring everywhere.

Tech specs

CPU Intel Core i7 2.6GHz
GPU Nvidia GeForce GTX 970M 3GB
Display 14in 1920x1080 IPS LED
Memory 256GB SSD, 16GB RAM
Disk Drives None
Connectivity 3 x USB 3.0, 1 x HDMI, 802.11 a/b/g/n/ac WiFi, Bluetooth 4.0
Dimensions 345x235x17.9mm
Weight 1.9kg
Price from $2399 / razerzone.com/sg-en

Alienware 15

What is it?

What could be more filled with advanced technology and lethal weaponry than something extraterrestrial in origin? One of the most instantly recognisable gaming brands around, Dell's Alienware line looks undeniably slick, and started this whole full customisable LED lighting fad that's been hitting the market.

Tech specs

CPU Intel Core i7 2.6GHz
GPU Nvidia GeForce GTV 970M 3GB
Display 15in 1920x1080 IPS LED
Memory 128GB SSD, 8GB RAM
Disk Drives None
Connectivity 4 x USB 3.0, 1 x HDMI, 802.11 b/g/n/ac WiFi, Bluetooth 4.1
Dimensions 386x270x34mm
Weight 3.21kg
Price from $2599 / alienware.com.sg

Asus Republic of Gamers 501

What is it?

Asus' entry into the ultraportable gaming laptop market is the G501, which weighs in at a flyweight 2.06kg while measuring 20.6mm tall. Despite its diminutive stature, the G501 sure packs heavyweight power, which explains its price to match. It's still more affordable than something similar from one of the big brands though.

Tech specs

CPU Intel Core i7 2.6GHz
GPU Nvidia GeForce GTX 960M 4GB
Display 13.3in 2560x1600 IPS LED
Memory 512GB SSD, 16GB RAM
Disk Drives None
Connectivity 3 x USB 3.0, 1 x HDMI, 802.11b/g/n/ac WiFi, Bluetooth 4.0
Dimensions 383x255x20.6mm
Weight 2.06kg
Price from S2698 / asus.com/sg

MSI GT80

What is it?

This is the ultimate gaming machine, with probably the closest level of performance – and size – to an actual desktop computer. There's an 18in screen, mammoth amounts of memory and RAM, and an unbelievably powerful 8GB GeForce GTX 980M GPU. In fact, you could even upgrade your GT80 to have 4K visuals, which is just stunning.

Tech specs

CPU Intel Core i7 2.7GHz
GPU Nvidia GeForce GTX 980M 8GB
Display 18.4in 1920x1080 IPS LED
Memory 1TB HD, 256GB SSD, 16GB RAM
Disk Drives None
Connectivity 5 x USB 3.0, 1 x HDMI, 802.11b/g/n/ac WiFi, Bluetooth 4.1
Dimensions 456x330x49mm
Weight 4.5kg
Price from S5699 / msi.com

THEN VS NOW

Alienware M15x vs MSI Titan

There might be some debate over who gets the title of world's first gaming laptop, but one of the first few out there was the Alienware M15x (like The Truth; see what we did there?). Released in 2008, it had a 1920x1200 screen and a GeForce GTX 8800M graphics card, which were thoroughly decent specs for a desktop, let alone a machine you could cart around.

However, it must be said, that was if you checked off plenty of expensive options, but if you got the m15x in poverty spec guise, it was a little more... vanilla. If you wanted the good stuff, you must have been deep of pocket, because space age tech in the form a 64GB SSD would make you poorer by US$775($1070), or roughly a third of the machine's base price.

And while the game (see what we did there again?) has moved on somewhat since 2008, the basic philosophy behind a gaming laptop hasn't. That is, gaming laptops today still try to cram as much desktop-spec hardware as possible into a relatively smallish device.

Weight is a far secondary consideration, as something like the new MSI Titan weighs 4.5kg, which is fairly hefty to say the least, considering the new MacBook weighs in the neighbourhood of 900g.

That said, those aren't empty calories, because it's running a pair of GeForce GTX 980M graphics cards, a quad core Intel i7 processor and a DynAudio sound system. And yes, it even has a mechanical keyboard with Cherry MX switches, because, you know, gamers can't be using plain ol' membrane keyboards, not even on the go.

Yeah, well, that is kinda gimmicky, but then gaming laptops are gimmicks, as are most gamer-oriented products, come to think of it. But then, that doesn't stop us from wanting one, or wondering what the future will hold, like Smell-O-Vision, perhaps.

5 things you need to know about gaming laptops

Gaming laptops are mighty powerful and they can do plenty of things well, but consider the following before you shell out for one

They're not really meant for your lap:

Yes, alright. They may be laptops, but only for a given value of "lap" and "top". Because most weigh around 3kg, balancing one on your knees for hours on end won't be particularly fun, to say nothing of how warm one gets when your games are pushing the graphics card and processor to their limits.

They're not exactly portable:

These things are marketed as desktop replacements for a reason, because lugging one around is almost like dragging your desktop with you wherever you go. There's the power brick to take into account too, meaning you're going to need a big bag, as well as strong shoulders/arms. Some models such as Razer's new Blade and Asus' G501 are bucking the trend though, and are practically in ultrabook territory with their physical stats.

They're not all-day devices:

Gaming laptops tend to have pretty high capacity batteries, but when you factor in powerful, power-hungry components, you're not going to want to stray too far from a wall socket. Even the best gaming laptops will struggle to last around five hours on a single charge, so while they allow you to game off the grid, you're going to want to keep a generator handy, too.

They can't go up to eleven:

The specs of most gaming laptops is usually enough to make any member of the PC gaming master race weep with joy, but beefy though the components may be, you still won't be able to crank graphics settings all the way on something like Grand Theft Auto V.

They'll cost you:

All that power doesn't come cheaply, so prepare to hand over at least $2300 if you want a decent gaming laptop, which can go up to well over $4000 if you want a high-performance model.

FOR EVERYTHING IN BETWEEN

2-in-1 laptops have been around since 2002, but didn't really taken off as a viable concept until recently. These include PCs that can switch freely between tablet and laptop modes, either by swivelling the display, or attaching a keyboard dock. Arguably, it was probably the advent of the iPad in 2010 that started the ball in motion, even though that was just a tablet.

That's because PC manufacturers needed something to compete with the iPad, which was quickly eating into laptop sales. Hence, the resurgence of 2-in-1 laptops in 2012. The reasoning was simple: a 2-in-1 would provide you with all the convenience of a regular tablet, while providing you with the option of the expanded capabilities only a PC could provide. Some have taken to some of these devices "laptets", which is frankly terrible, so we'll just stick to calling them 2-in-1s for now.

Early efforts

One of the first modern 2-in-1s was the Asus Transformer Book T100, which came on the back of Asus' several efforts to create new product categories in the PC market. It even came up with the PadFone, a smartphone that could be docked into a tablet, that could then be plugged into a keyboard. Doctor Frankenstein would've been proud.

Do it yourself

Many PC makers followed suit, but it wasn't until Microsoft stepped in to develop their line of Surface devices that hybrids started getting more mainstream attention. It's been a long journey, especially with Microsoft's much-derided Surface RT operating system, but finally we've got what seems to be the solution with the new Surface Pro 3 and Surface 3, which both run full Windows 8.1. And they even come with pen input, completing the journey the company started in 2002 with convertibles during Microsoft's Tablet PC initiative.

4

Reasons to use a 2-in-1

The great thing about hybrids is there are so many reasons they're better than their individual parts

They're great for both work and play:
Since they run on both SSDs, Intel Core processors, and full Windows, 2-in-1s have both the speed, computing power, and programs to handle all your basic entertainment and work needs. You could watch movies, play less-graphic intensive games, and even work on MS Office like a boss.

They've got the connectivity:
Tablets don't come with USB ports and the such, so you can't hook them up to accessories like you could with a 2-in-1. You could hook up a mouse, plug in thumb drives, and even connect to a desktop monitor whenever there's one available for more ergonomic productivity.

They're more portable:
Being smaller and lighter than even ultrabooks, 2-in-1s are undoubtedly easier to carry around wherever you go. Hopefully, that means more entertainment on-the-go, as opposed to having to prepare documents even when you're commuting.

They've got great battery life:
Since they use components with lower power requirements, 2-in-1s are able to run for longer than conventional laptops. Again, that's great for doing more without being tethered to a power outlet.

NOW GET THESE

Lenovo Yoga 3 Pro

What is it?

The Yoga 3 Pro draws its name from its 360-degree rotatable screen that allows it to bend in several positions, setting it apart from other 2-in-1s in terms of how it changes between laptop and tablet configurations. Undeniably useful and versatile, this flexibility extends to performance as well, thanks to its new Intel Core M processor and gorgeous display.

Tech specs

CPU Intel Core M5Y70 1.1GHz
GPU Intel HD Graphics 5300
Display 13.3in 3200x1800 touchscreen
Memory 512GB SSD, 8GB RAM
Disk Drives None
Connectivity 2 x USB 3.0, 1 x HDMI, 802.11b/g/n/ac WiFi, Bluetooth 4.0
Dimensions 330x228x12.8mm
Weight 1.19kg
Price $2399 / lenovo.com/sg

Asus Transformer Book T300 Chi

What is it?

Asus has played the hybrid game for a long time, and for good reason – 2-in-1s that look and feel as good as the T300 Chi. The world's thinnest laptop of its class, the T300 Chi lets you bring it around with both ease and style, and will undoubtedly get the job done though it doesn't come with the unseen mystical force after which it's named.

Tech specs

CPU Intel Core M5Y71 1.2GHz
GPU Intel HD Graphics 5300
Display 12.5in 2560x1440 touchscreen
Memory 128GB SSD, 8GB RAM
Disk Drives None
Connectivity 2 x microUSB, 1 x HDMI, 802.11b/g/n/ac WiFi, Bluetooth 4.0
Dimensions 318x192x16.5mm
Weight 1.42kg
Price from $1498 / asus.com/sg

Microsoft Surface 3

What is it?

With full-fat Windows 8.1 that can now be upgraded to Windows 10 for free, the Surface 3 has been made even better. With up to 10 hours of battery life and built-in essential ports, this is one of the best 2-in-1s around. You even have the option of going for the Core i7-equipped Surface Pro 3 if your needs are more intensive.

Tech specs

CPU Intel Atom x7 1.6GHz
GPU Intel HD Graphics
Display 10.8in 1920x1080 touchscreen
Memory 64GB SSD, 2GB RAM
Disk Drives None
Connectivity 1 x USB 3.0, 802.11 a/b/g/n/ac WiFi, Bluetooth 4.0
Dimensions 267x187x8.7mm
Weight 0.62kg
Price from $748 / microsoft.com/en-sg

THEN VS NOW

While the hybrid laptop/tablet might seem like a relatively new idea, with the first examples such as the Asus Transformer only hitting the market three or four years ago, the idea of such devices actually go back a bit further.

Okay, not very much further, but you know how Moore's Law is and all – years are like centuries to computing. As far back as 2005 at Intel's Developer Forum, it mooted an "ultra-mobile notebook PC that would allow consumers in the future to enjoy digital entertainment away from, in and around the home". In essence, a convertible.

At its Developer Forum that year, Intel even went so far as to describe its concept system as having a touchscreen, the ability to hook on wired/wireless keyboards, GPS functionality and syncing with home-based systems through the cloud. It goes without saying that Intel claimed this device was "small enough to fit in the user's hand".

Big yawn, right? But remember that in 2005, the Apple iPad was still five years away from launch, or in other words, a funny little idea pinging around Steve Jobs' overheated imagination. Heck, even the Apple iPhone, the device that pioneered this whole smartphone thing was only launched in 2007.

Also bear in mind also that newfangled terms like "touchscreen", "Cloud" and even "tablet" weren't in widespread use, or in use at all, come to think of it. Yes, these were the Dark Ages of the mid-2000s, when Blackberry was still A Thing and Nokia still wasn't doing too badly for itself.

But look how far we've come today, in just two short years since the Asus Transformer (probably the first true 2-in-1) took its first wobbly steps.

Yes, well, admittedly hybrids are still taking wobbly steps today, but the future for hybrid laptops/tablets might just take off with the Microsoft Surface 3. Not that previous Surface devices were bad, at least on the hardware front (an Nvidia Tegra chip is hardly anything to sniff at), but most criticism was levelled at its Windows RT operating system, with its architecture not able to support regular Windows apps.

With the new Windows 10, though, things are looking different, what with how the new OS is unified across all Windows devices, and yes, that even includes smartphones and the Xbox One.

And since we're on this whole Moore's Law thing, the Asus Transformer had a titchy little Intel Atom chip, and while the regular Surface 3 still uses an Atom processor (albeit quicker than the one in the Asus), some variants of the Surface Pro 3 come with an Intel Core i7 chip, which is some serious computing power indeed.

BACK TO THE FUTURE

At CES Asia in Shanghai, we sat down with Kirk Skaugen, Senior Vice President and General Manager of Intel's Client Computing Group to talk about what the technology giant's got in store for us.

Imagine 8K TVs in a smart-connected living room packed to the brim with just about everything rocking the Internet of Things. 360-degree capture for 4K video that you can stitch together on your home PC and watch on your smartphone. 4K display-enabled utra thin and portable all-in-ones. Devices where the only password you need is yourself. Laptops with zero ports that charge and communicate completely wirelessly.

Judging by what we saw at their keynote and heard from the man himself, it looks like exciting times ahead with all these in the pipeline.

I believe that the laptop is evolving to the 2-in-1, where you can have the best of a tablet and the best of a notebook in a single device. As we move to our next generation Core technology with Skylake at the end of the year, we believe we'll have even thinner fanless designs with our core M processor, as well as both user-facing and world-facing 3D camera technology. It'll also have the potential of being the first PC that really could eliminate all wires.

Soon we'll build a reference design that enables wireless display, wireless docking, wireless charging, and wireless data transfer, with LTE coming into the notebook too so we could really, for the first time ever, build a PC with no connectors. I remember it took me about 7 years before I quit carrying my Ethernet cable to Asia after we launched Centrino in 2003, so it'll be many years before we stop carrying wires. But with the 6th-generation Core coming later this year, you literally could go with the first PC that had no connectors and no wires.

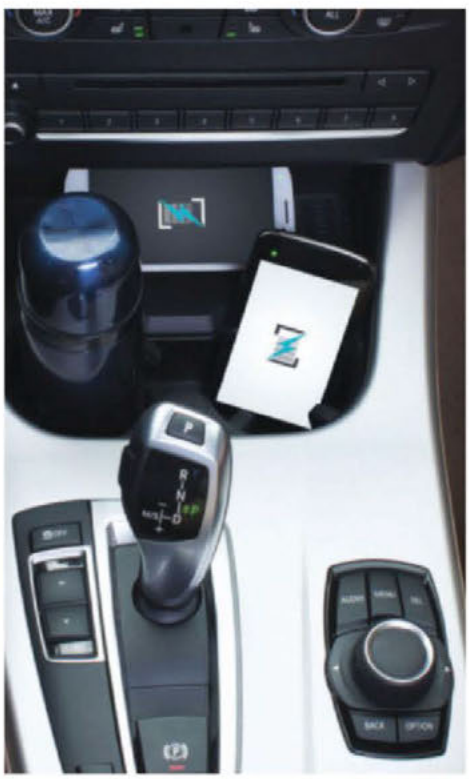
I think USB-C is an exciting technology because we can start powering our devices through it as well. I think as devices get thinner, you'll see ports continue to get removed from the device. And whether you choose Thunderbolt or USB-C, I think we're on the path to zero wires, but it'll go to one wire first.

I think what's wonderful about the traditional ecosystem is it's the ultimate Darwinian device – it keeps reinventing itself. We went from towers to notebooks to 2-in-1, and year after year the innovation has been very strong. I think for a few years we lacked innovation in the mid 2000s. But that innovation now is back alive and well. But the categories are blurring, and the reason we created my group at Intel, the Client Computing Group, is because we just see it as a continuum of screen sizes.

A 15in detachable, is that a tablet or is that a notebook? If you go to a 18in or 23in portable all-in-one with a battery, is that a TV, or is that a large tablet? And how do you classify tablets or 7in devices with connectivity? So, from an Intel perspective, we just want to compute and connect, and everything is going to ultimately get connected with wireless WAN, especially as we move to 5G.

I think it's exciting what Microsoft announced at Build – a unified application framework. It enables your phone displayed on large screens, so you can design once for a broad range of screen sizes. We think that's really exciting because we can build a system that has the best performance in mobility mode for battery life, but when it's docked, use the advantages that Intel has over ARM to burst the performance up to have capabilities well exceeding that. So something that might be operating at 2-4 watts, you can actually burst that by docking it and blowing air over it, and because it's cooler you can actually get turbo performance.

Instead of going to "no passwords", we want it to be "you are your password". And your physical identity is the most secure thing because there's only one you. So whether it's iris or facial scan, the 3D technology now enables you to eliminate the spoofing that used to happen, such as



being able to run videos in front of a traditional 3D camera. Now we're actually able to detect blood flow, blinking, and have dozens of facial detection points using 3D technology that makes us incredibly secure.

We believe computer security is incredibly important, that's why we spent almost 8 billion dollars on McAfee to be an expert in security, because our brand is very important when we move to a no-passwords environment. With Windows login on Windows 10 using RealSense technology, Microsoft and Intel now have actually agreed on a security standard to make sure that consumers can buy with confidence.

I think we need to drive down the power of everything from displays to our own silicon. The most important thing we have to do for all devices is drive down the power. It's not going to be about the battery size any more, if we want to get incremental weight out of there. We need to have wireless charging be ubiquitous so you can charge 10 minutes here in this interview, 10 minutes in the coffeeshop, and 10 minutes in the car on the way home. I think if we can charge wirelessly at your desk at home, in your hotel, at the coffeeshop, you can shrink the size of batteries to the point where you're just always charging and won't be afraid of running dry. That's not to say that we're not interested in different battery technologies. We do invest with our Intel capital in lots of exotic battery materials. But the most important thing we can do is lower the power and make wireless charging as easy or easier than getting WiFi access is today.

For wireless charging, the most important thing we need to do is get standards aligned. At MWC, we announced the Power Matters Alliance and the Alliance for Wireless Power are combining. That means that brands like Duracell, Starbucks, AT&T are all aligning around this magnetic resonance technology. We need to get the final Qi group to merge so that consumers don't need to worry about compatibility. Until then, we'll enable covers for phones that tablets with tri-mode, so that they don't need to worry about which technology or standard, at least for the next year or two.

After that, we need to drive down the price, and Intel is actually helping to invent higher power charging. Because everything done so far today has only been 5 watts or lower, and phone only. Intel wants the same technology to be able to be support wearables, phones, tablets, PCs, which means we need to get to 20 watt versions, and ultimately 40 and 50 watts too. Once we do that, we want to enable the whole ecosystem of transmitters, so the consumer can buy a transmitter, put it under this table, and have a new PC or tablet charging here, and then maybe 6 months later it'll show up at a coffeeshop as well.

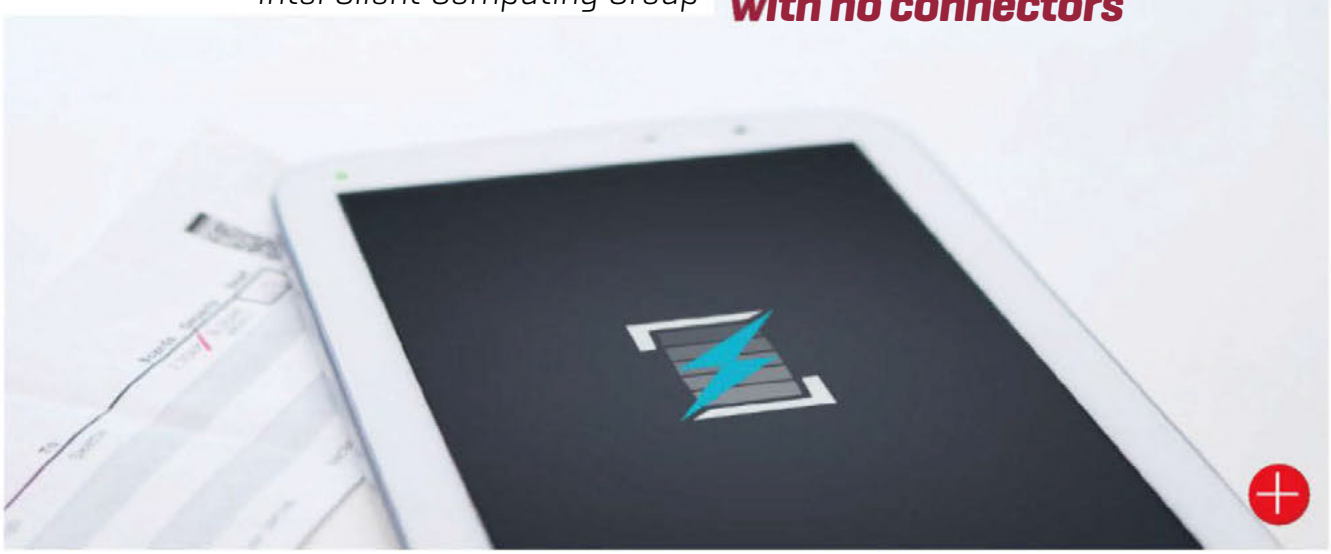
Then we'll have a ecosystem effort, just as we did with Centrino. If you remember in 2003, Intel had a logo program where you walked into a hotel, or a coffeeshop, and it said this hotel is powered by Centrino. All that meant is we went and tested the Wi-Fi connections so that you could seamlessly connect. So we need to do something similar in wireless charging where if you go into a place that has magnetic resonance, you know for sure that it's going to be compatible.

We'll have 5 and 10 watt solutions this year for phones, tablets, and wearables. And then for PCs, we'll be starting with Skylake, with it hopefully growing in 2016. So it really depends on whether you want to deploy a phone and tablet solution this year, and then just upgrade infrastructure, just as you do with anything else, when higher wattage solutions come out.

The other thing I think will happen is, especially with two in ones with the detachable keyboards, that you can buy different keyboards. You can buy a lightweight one just to cover your screen, you could also buy a keyboard that has wireless charging in it. You could buy even a higher keyboard that has wireless charging and an extra battery, so I think the peripheral market will be very good, and that'll help the OEMs, so they make good money on peripherals as well.

Kirk Skaugen
SVP and GM
Intel Client Computing Group

"We could really, for the first time ever, build a PC with no connectors"



Follow us

twitter.com/Stuff_SG

STUFF PRESENTS

THE GREATEST MUSIC YOU'VE NEVER HEARD

AND HOW TECH CAN HELP YOU DISCOVER THE NEXT BIG THING

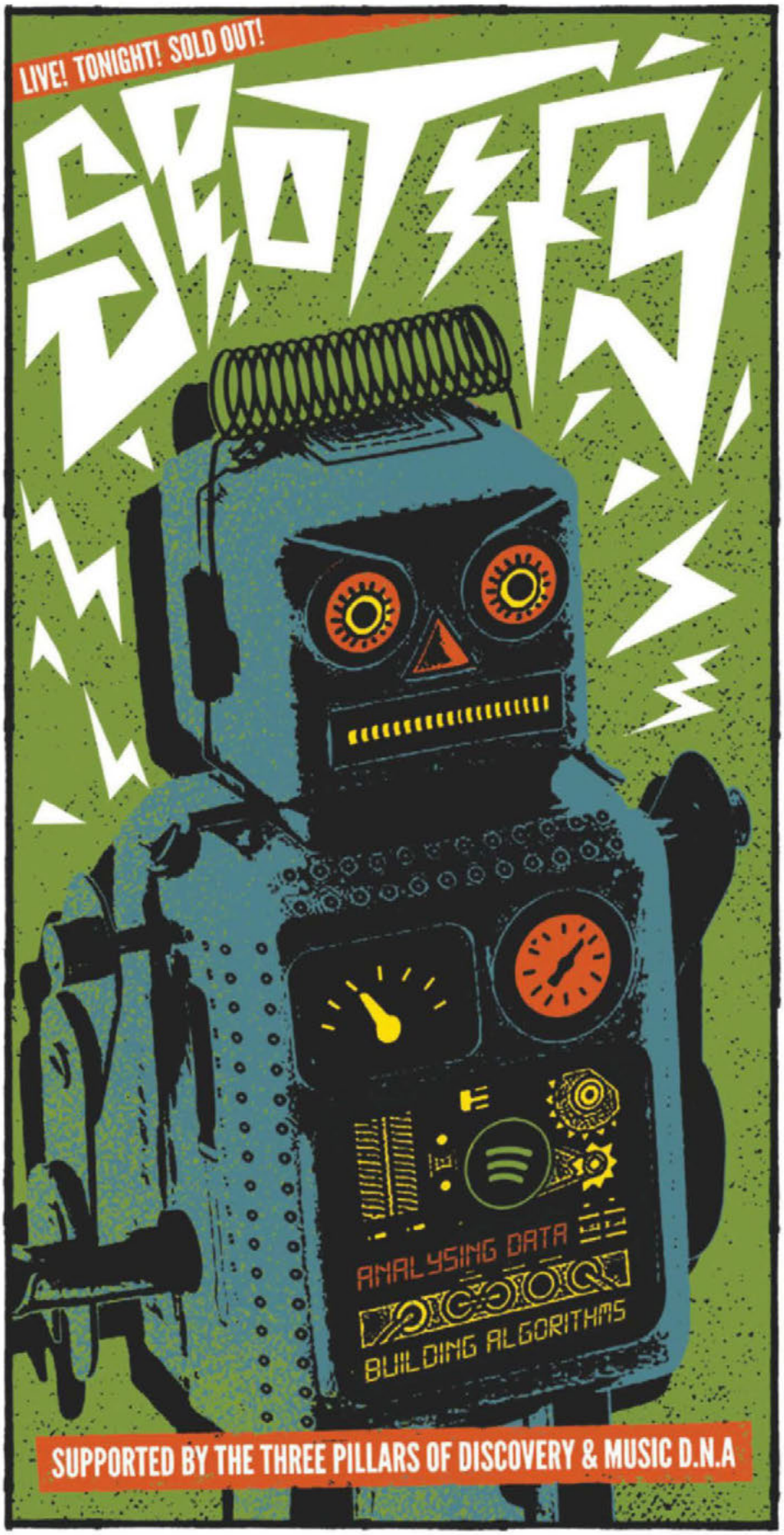
YOU HAVE EVERY SONG EVER RECORDED AT YOUR FINGERTIPS, BUT YOU'RE STILL LISTENING TO THE SAME OLD ALBUMS OVER & OVER AGAIN..

IT'S TIME FOR TECHNOLOGY TO HELP YOU FIND YOUR NEW FAVOURITE BAND

SPOTIFY iTUNES TIDAL DICE

TOPSIFY DEEZER PLAYLIST SOUNDCLOUD

WORDS: TOM WIGGINS ILLUSTRATIONS: WETHREECLUB



Back in 2014, a website appeared called Forgotify. It existed for one reason only: to get the four million songs on Spotify that nobody on earth had ever listened to a keen set of ears.

Forgotify works by scouring Spotify's catalogue for songs with a popularity rating of zero (about 20% of them) and picking one at random for the user to listen to. As soon as it's been heard once it is taken off Forgotify's database; but with new music being added to Spotify all the time, Forgotify's makers say the list of neglected tunes is very gradually growing longer.

This is not a problem unique to Spotify. The streaming Swedes claim that only 20% of the music on a certain download store (one that rhymes with 'Pie Tunes') has ever actually been bought, which makes Forgotify's numbers look distinctly healthy.

The thing is, Spotify's right. In an age where somebody can, to paraphrase Craig David, make an album in their bedroom on Monday and have it available to stream to anyone in the world by Wednesday, there's more music available to us than ever before – and on top of that, accessing it all only costs $10 a month.

Too much choice?

This means many music fans suffer from a kind of decision fatigue. When you've got all the music in the world, it's difficult to decide what to listen to, so you fall back on the stuff you're already familiar with. Did someone say #firstworldproblems?

"I think the vast amount of music is an opportunity, not a problem," says Dave Rowntree, a solicitor, animator, pilot, politician, radio DJ and, when he gets time, drummer for Britpop legends Blur, "but streaming services are some of the worst music discovery platforms I've ever seen. As a music

Blur's Dave Rowntree (second left) believes music streaming platforms don't offer much in the way of discovery

resource, Spotify's one of the best in the world, but look at its recommendations: if you play a Blur track it tells you that you might also like Pulp and Oasis. No! Really?"

Ouch. Dave has a point, although *Stuff* can't help thinking he's being a little harsh. Pick a lesser-known band and its algorithm does a decent job of picking out some similar artists, and it's at that level where discovery is possibly most important. It's also just a tiny part of Spotify's discovery strategy – and, arguably, its dumbest.

Can you feel the algorithm?

Miles Lennon is Spotify's product manager and from his desk in New York he explains to *Stuff* how the company having names that sound like tracks from *Now That's What I Call Organic Supermarket* they do a reasonable job. Obviously they're not all bespoke; it's more a case of Spotify picking the most relevant ones for you from the thousands that have been created, and the further you delve into them the less relevant they get, but Spotify says this will improve with use.

But Dave's still not convinced: "I don't think there's any value in coming up with a magic algorithm to draw connections between music. The connections between songs are deeper, they're not mechanical." *Stuff* reckons writing off algorithms altogether is a bit naive, but again he's got a point. Take BBC 6 Music,

"I think the connections between songs are deeper than using an algorithm; they're not mechanical"

combines its three pillars of discovery, of which its algorithm is just one. It's designed to analyse the 'music DNA' of a track and, combined with the taste profiles Spotify has built from every user's listening history, can be used to populate the personalised playlists that its latest version offers listeners at different times of the day.

Fire up Spotify in the early evening and the Now menu will offer you playlists created by human beings (Miles calls them musicologists) with titles like Mellow Dinner, or Farm To Table Folk & Acoustic. Apart from for example, a station that can play Coati Mundi one minute and The Stone Roses the next without either feeling out of place. Can you write an algorithm that can do that? Probably not. But that's why Spotify also has a built-in social network, which includes the sidebar of shame/fame that tells other users what you're listening to.

Word of mouth

It turns out human beings are kind of important when it comes to music. They're the ones who make it, who listen to it, and they tell each other ▶

BETTER OFF FORGOTTEN?

We listened to four random tracks via Forgotify to see if they were unplayed for a reason...

A Safer Place
Gene Burnett
An inoffensive but largely forgettable acoustic strummer, *A Safer Place* comes from one of Burnett's 27 albums available on Spotify, which doesn't bode well for the whole 'throw enough sh*t and eventually something sticks' approach.
Verdict Bin it

Actually
The Names
Belgian post-punk is the kind of thing you'd expect only the most ardent 'tache-twiddling hipster to be into, but The Names worked closely with Martin Hannett [of Joy Division and Factory Records fame]... although clearly this is no *Love Will Tear Us Apart*.
Verdict Spin it

Farewell Words
Jiang Dawei
Jiang Dawei is a Chinese folk singer [we Googled him]. Considering Spotify isn't available in China, it's not hugely surprising that *Farewell Words* has never been listened to [until now!] – and now it's been removed from Forgotify it may never be listened to again.
Verdict Bin it

Sabre Dance
Berlin Trombone Quartet
Sabre Dance is a traditional Armenian tune often used in fast-paced TV chase scenes but when played on a quartet of trombones it takes on a vaguely comedic quality, like the sound of four overweight men racing to get the last pasty in Greggs.
Verdict Spin it

HOW TO... BACK YOUR FAVOURITE NEW BAND

Music Glue

Music Glue allows any band – from banjo-bothering festival headliners Mumford & Sons to your one-man Wu-Tang Clan trumpet covers band – to sell songs, CDs (remember them?), gig tickets and merch easily. Bands can even customise their page so it looks like their own.
musicglue.com

PledgeMusic

PledgeMusic's Kickstarter-esque campaigns give fans a place to help fund a band's next record. They can offer added extras such as T-shirts, posters and gig tickets in return for varying sums of cash – it's even been used by Megadeth and The Darkness.
pledgemusic.com

Tradiio

Tradiio is a stock market where you trade in bands. The artists with the greatest investment rise to the top, and if you're an early investor the value of your investment grows as the profile of the artist does – and if you later sell your share, you'll get more back than you put in.
tradiio.com

Rocketfuel

As well as individual projects, Rocketfuel gives fans the chance to support bands on a subscription basis, offering extra rewards for doing so. Give Sheffield-based jazz musician Philippa Hanna $200 a month and she'll do an annual acoustic gig at a venue of your choice.
rocketfuelhq.com

about it. Usually the ones you pay most attention to are the ones you know; the ones whose tastes you trust because you've bonded over the same songs, gigs and records. That's why Spotify creates a chart of tracks that are popular among your friends that updates every day – which is all well and good, but for lots of people there's a certain pleasure to be gained from being the first of your friends to discover a new band.

SoundCloud has a reputation as a platform for wannabes to pimp their wares, and to an extent that's true – according to *Billboard* only 20% of SoundCloud's music comes from labels – but it doesn't tell the full story. "Historically what helped attract people to SoundCloud was that many artists used it to upload stuff before it was finished to get feedback," says Sylvain Grande, SoundCloud's VP of Product, "but we're definitely not just a promo platform."

There's a certain pleasure to be gained from being the first of your friends to discover a new band

SoundCloud is a great platform for discovering new artists, as it provides tools for just about anybody to share their music – it's the YouTube to Spotify's Netflix

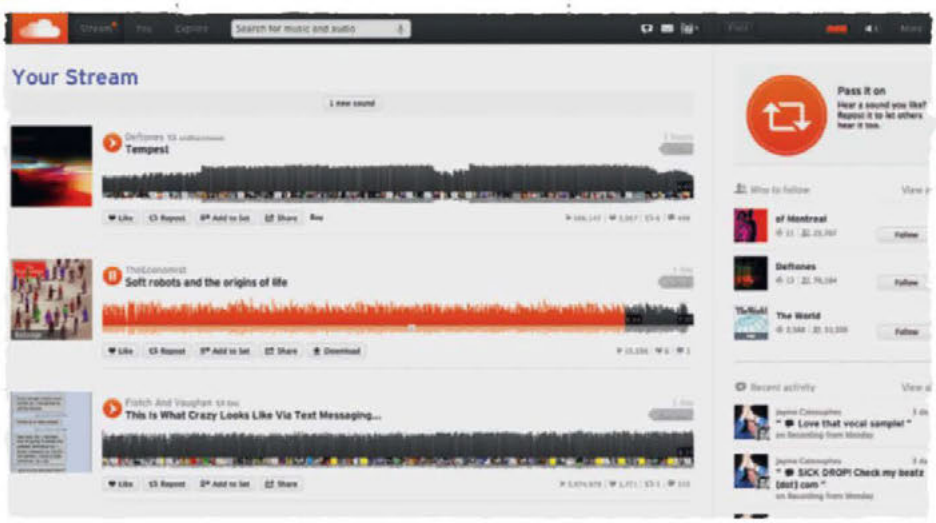
Disco-tech

While its lack of a full catalogue means it'll never be a direct competitor to Spotify *et al*, it's the stuff you won't find elsewhere that makes SoundCloud so good for discovery. Lorde found an audience for *The Love Club EP* on SoundCloud six months before Universal released it, while Drake and Kendrick Lamar have been known to debut stuff there, too.

DJ Shadow used SoundCloud to upload the mix that got him kicked off the decks at a club in Miami, and Four Tet put a collection of rarities on there called *0181*. It's the YouTube to Spotify's Netflix; it has democratised music. "We provide the tools for literally anyone to be able to share their creations," says Sylvain. "We're not a record label. We're not here to push one particular artist over another. We want to create massive opportunities for as many artists as possible. It's the users and the community that decide [what's popular]. People follow artists they like, irrespective of how they discovered them."

As with Spotify, it's SoundCloud's community that's likely to lead you to the good stuff, and both platforms are pushing playlists in a big way. "We have millions of curators who aren't artists themselves, but they produce playlists that are liked, reposted and shared across SoundCloud," Sylvain says. Therefore, while the site has an algorithm recommending related artists based on genre classification and sonic analysis of each track, it's the combination of man and machine that gets the best results.

Spotify's user-generated playlists also have a big part to play in getting



a band heard. Aileen Crowley works for a record label in Nashville called DigSin, and one day last year she discovered one of their bands' Spotify streams had doubled overnight thanks to their inclusion on a playlist with 50,000 followers. Sites such as Playlists.net and Topsify.com allow people to share their virtual mixtapes, and some of them have become so influential that labels are pitching songs to the playlisters in the same way they would to a radio station.

Radiohead-hunted

In fact, radio may play a bigger part in the future of streaming than many could ever have predicted. Apple's headhunting of Radio 1 DJ Zane Lowe, plus multiple producers to work alongside him, shows playlists curated by those with industry experience will be a real focus for Cupertino's new Apple Music offering.

It's a tactic also adopted by the ticketing app Dice, launched last year by *Monument Valley* maker Ustwo. At first it touted its lack of booking fees as its USP, but now the shift has focused to helping users discover the best gigs in their area, with listings available for London, Manchester, Bristol and Glasgow.

The shows are picked by a four-strong team led by music editor Jen Long, a former DJ who used to front the *BBC Introducing* show on Radio 1. While there are bigger gigs for sale on the app, such as last month's British Summer Time shows in Hyde Park and September's Bestival, the focus is on the stuff you might not be so familiar with.

Which gig? Roll the Dice...

Stuff meets Jen at Ustwo's hipster youth club of an office in East London. "I think that getting people out to gigs is the key to turning them into the ▶

Dice helps music fans discover the best gigs in their area, whereas Tigmus is trying to change the way gigs are arranged, with fans pledging to attend them

person who doesn't just stream the album three times but actually becomes a proper lifelong fan," she says. "For me, when I see a band live is when I understand them, but when there's not much marketing behind a gig, it's generally all word of mouth. If we can be that voice and tell lots of people 'You have to check out this band' then I think that's going to be really valuable."

Dice is working to make that process as simple as possible: there's in-app Spotify integration to go alongside the descriptions, related gigs at the bottom of each listing and more to come. "We're working on making the app smarter," she explains. "The idea is to look at what people have bought tickets for and what you spend a lot of time looking at and figure out what the best gigs are for you.

"We're all such huge music fans and we're all so involved in music that we already know most of the bands when they come through. We're using data, but also the human curation that you have through years of working in music; that gut feeling that something's going to be a great gig."

Kickstart me up

Tigmus arguably takes things a step further into DIY territory. As a kind of cross between Kickstarter and Airbnb, it serves two main purposes: firstly a database for bands to book gigs, and secondly a marketplace for fans to pledge to buy tickets for them. If a gig fails to attract enough fans before a certain date, the show's off and nobody loses money. If all goes well, bands get paid around 30% more, fans pay about 30% less and everybody has a lovely time. At least that's the plan.

Tigmus is the brainchild of Tom Hodgson and Oli Steadman, members of Oxford-based indie-folk band

TIDAL: A HIGH-RES WINNER?

If audiophile-in-chief Neil Young is to be believed, there's a lot of music within the music you're listening to that you've never heard. But will high-res audio ever be more than a niche concern? Jay-Z and his band of Tidal-supporting audio avengers are certainly on Neil's side, although you get the feeling they're more bothered about the cash than the sound quality.

"Just because there's an opportunity to have better-sounding music doesn't mean people will grab it," says Blur's Dave Rowntree, "especially if they're going to have to spend more money. If there's some must-have hardware, that might do it, but just the increase in quality probably isn't enough." High-res audio on the next iPhone, anyone?

"We're using data, but also human curation from years of working in music"

Stornoway, who noticed that while the way we listen to and pay for music has changed beyond recognition in the past 10 years, the way that gigs are arranged hasn't.

Stuff meets Tom in a Brighton pub during a rainy day at this year's Great Escape festival, where he explains: "Live music is still very web 1.0; it's a clunky, opaque world of booking agents, promoters, managers and all these people who are instrumental to great gigs, but it's difficult to break in as a young artist.

"We're trying to make it more transparent. If it's going to become more web 2.0, it needs to be much more plugged into all these streaming habits, and automate some of the processes that are currently based on people having to pick up the phone to get things done."

The great gig in the Skynet

Like Jen Long at Dice, Tom reckons the key to turning what plays into what pays is to convince people to go to gigs and make it as easy as possible for them to get there. With around 300 venues signed up and a couple of hundred artists, plus 100 Tigmus-powered gigs under its belt, Tom's optimistic. "The more venues that sign up, the more artists it'll attract, and vice versa," he says. "Once we get some of that traffic coming through, we can do some really cool stuff with the data."

So, can an algorithm really find you a new favourite band? Not without human help, but then that's probably no bad thing. After all, if you take the whole thing to its logical conclusion, we'd have to hand over music-making to the machines as well, and pretty soon we'd end up living on a planet that resembled *Terminator: The Musical*.

Although on second thought, that could be pretty entertaining.

SAMSUNG GALAXY S6: THE BE

YOUR MORNING STAPLE

Stuff.tv

FIRST PLAY PAYDAY 2: CRIMEWAVE EDITION PS4, Xbox One

Robbing a bank, like attempting a loop-the-loop around the Golden Gate Bridge in a jumbo jet, is one of those things best done in a virtual world.

So if *GTA V*'s online heists have given you a taste for co-op criminality, *Payday 2*'s next-gen debut, the *Crimewave Edition*, is for you. It has more than 20 DLC packs plus slightly spruced-up graphics. You won't stop to look at the scenery, but that's for the best as you'll often have entire strike teams on your tail.

As part of a four-person team you take on robberies that vary in complexity and difficulty, from the relatively simple task of knocking off a security van in an upmarket town square, to liberating a crashed money train of its stash by burning a hole through the carriage and pumping the safe full of water in order to pop it open.

Completing a job is unlikely to ever be a case of simply walking in, pocketing the cash and waltzing out to a waiting getaway vehicle. More complicated jobs require proper teamwork in order to keep the cops at bay and control any hostages while you get to the loot. And all that's rarely straightforward: *Payday 2* has more drills than an overly conscientious fire warden at B&Q, and the damned things keep jamming.

Fortunately, your standard copper is lacking a little in the smarts department... but the more serious things get, the tougher and cleverer the boys in blue become, until you're up against SWAT teams with smoke grenades and heavily armoured one-man armies.

[Words Iom Wiggins]

A SKATEBOARDING CLASSIC RETURNS

TONY HAWK'S PRO SKATER 5

PS4, Xbox One, PS3, Xbox 360

For gamers of a certain vintage, the *Tony Hawk* games marked a golden age of console gaming, when multiplayer mode meant meeting up with real humans and passing the pad over a packet of Doritos and some foreign lager.

So after months of Tony Hawk teasing it from behind his Twitter account, *THPS* is back – and the man himself promises a return to the classic OTT gameplay that made the series such a hit, albeit with an online twist.

Players will be able to drop in and out of online skateparks to compete against skaters from around the world, linking together a preposterous number of tricks in some locations that look more than a little familiar. This being a *Tony Hawk* game you'll be able to take control of the Hawkmeister himself, or pick from a range of 'boarders who we're sure are a very big deal to some people, including Nyjah Huston, Aaron 'Jaws' Homoki, Lizzie Armanto and Tony's son Riley Hawk.

Curiously, the first set of screenshots suggest they've kept the graphics old-skool too, but we'll reserve judgement until we see it in action.

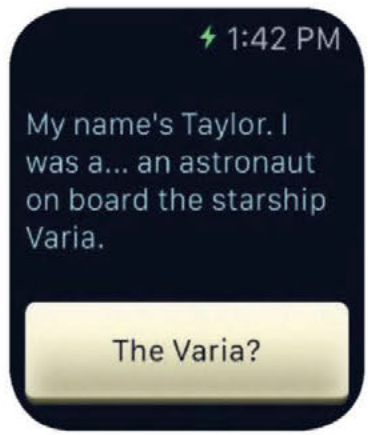
STUFF PICKS APPLE WATCH GAMES

SPY_WATCH $2.58

If wearing a smartwatch doesn't already make you feel like 007, *Spy_Watch* should. You're the M of your own agency and a colleague will periodically contact you from the field for instructions, successful missions being rewarded with upgrades to your spy's skills. Just make sure you don't get mixed up with your normal texts and end up telling Mum to assassinate Dad.

RUNEBLADE $free

Runeblade boils down the battles of a full-on RPG to a few simple taps on the face of your Watch. With each monster you manage to slay you'll get some gold dubloons which can be spent on spells and used to boost your stats. It's no *Skyrim*, but you'll soon find yourself clocking on to defeat an accursed stoorworm or hexed wolf while you wait for the bus.



LIFELINE $2.58

Lifeline puts you in contact with a stranded spaceman. It all happens in real time, so you can play it as you go about your day. Sometimes he'll just need words of support, other times you'll need to Google something for him (3G is pretty weak in outer space), but if you don't find yourself genuinely caring about his fate, you're colder than the dark side of the moon.

FIRST PLAY SKYLANDERS SUPERCHARGERS

PS4, PS3, Xbox One, Xbox 360, Wii U, iPad

This is just for kids, isn't it? Until now, we'd have agreed, but with *SuperChargers* introducing 20 land, air and sea vehicles, our inner sprog is starting to think it might be too good to waste on those pesky rugrats.

For the uninitiated, *Skylanders* uses a 'portal' platform on which real-life figurines are placed to transport them into the game. Position the Hot Streak model in place, for example, and a fully customisable hot rod will pop up onscreen. Plonk down its related owner, Spitfire, and you unlock more options, while progressing through the game opens up an ever wider array of mods: mix and match wheels, engines and body work.

Each ride feels different: Hot Streak is sticky and tactile on the road, a bit like racing an RC car around a massive car park, and the environments play a big part in the way the vehicles handle. Do you pick a submarine to dive under the procedurally generated ocean, or bounce over the waves in the hovercraft?

But multiplayer is where *Skylanders* really comes to life, mixing vehicle and on-foot challenges. Two player co-op continues in shared screen mode, but when using vehicles players tag-team so that one steers while the other shoots. For families of mixed abilities and ages it's a nice way to get everyone involved.

If you've upgraded to a new console recently there's no need to worry either – you can most likely still use your old portal. The Wii U can use the Wii portal and the PS4 can use the PS3 portal – although it's worth noting that the 360's portal won't work with the Xbox One. Boo.

[Words Iom Wiggins]

COMING TO A CONTROLLER NEAR YOU...

ASSASSIN'S CREED SYNDICATE

(PS4, Xbox One, PC / due 23 Oct)

Eight years after the original game was launched the *Assassin's Creed* World Tour finally rolls into Blighty, offering numerous opportunities for dodgy Russell Brand cock-er-nee accents, virtual historical sightseeing and myriad one-dimensional cultural stereotypes. Just like all the other games, then. Less repetitive than the pirate-based *Black Flag* (although we did dig the jolly sea shanties), the focus is on London during the industrial revolution; you play a twin brother/sister duo and there's a range of modes of transport to try, including trains, horse-drawn carriages and a zipline that you can fire from your cuff. All this should mean that traversing *AC*'s biggest ever map doesn't get tedious. And even if it does, you can always head to the nearest boozer and join in an old cockney knees-up. After that, you can head back home and play *Assassin's Creed* again.

ARIZONA SUNSHINE (PC)

One of the first proper games to be confirmed for HTC's Vive headset, *Arizona Sunshine* proves that zombies are most definitely joining the VR revolution. While they might struggle with the headset thanks to their rotting flesh, their shambling should make them a little easier to hunt in the scorching heat, which the game's Dutch makers say is as big a killer as the flesh-hungry fiends themselves. They also reckon the Vive's motion controllers bring 'unprecedented realism to zombie shooting', which suggests they know something we don't about the undead.

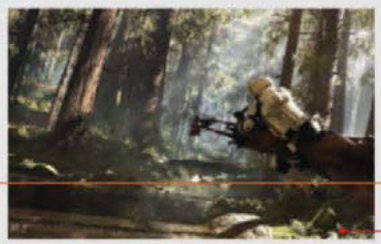
FIFA 16

(PS4, Xbox One, PC, PS3, Xbox 360)

Just 22 years after *FIFA International Soccer* launched, *FIFA 16* will finally allow you to take control of women's teams. Twelve national sides are represented, including England, and they've been motion-captured in the same way that the men's teams have. If only Sepp Blatter were still around to appreciate the tightness of their pixel-perfect shorts. What a shame the horrible old toad's gone. Oh, and if you're offended by this, you deserve to be locked in a room with a hungry Luis Suarez.

ASSETTO CORSA (PC, PS4, Xbox One)

If *Project Cars* has got your engine purring for some more hyper-realistic racing on your console, one of PC gaming's most highly regarded sims is also making the jump to its lounge-friendly counterparts. *Assetto Corsa* lacks the bells and whistles of your *Forzas* and *Gran Turismos*, but its handling model is widely praised as one of the best in the business. This console version, due next year, has the same laser-scanned circuits as its PC cousin, including Silverstone, Spa and the Nürburgring's Nordschleife, plus over 100 different cars.



INCOMING

AUGUST
- UNTIL DAWN

SEPTEMBER
- METAL GEAR SOLID 5
- NBA 2K16
- MAD MAX

OCTOBER
- RAINBOW SIX: SIEGE

NOVEMBER
- STAR WARS: BATTLEFRONT III

PS4, Xbox One, PC
/ thewitcher.com

The Witcher 3: Wild Hunt

Geralt the bounty hunter is back and, in an open-world environment many times larger than the previous *Witcher* games, there are plenty of monsters to go around...

Everyone's favourite white-haired slayer returns, and in this open-world third instalment it feels as though Geralt has finally got the game he deserves: the one that developer CD Projekt Red has been aiming for all along.

You'll feel this in the freedom of the massive open-world setting, but it's also evident in every other aspect that's been expanded, evolved and tweaked.

As ever, the titular monster-hunting witcher is the star. He's still as dry as a skeleton's wishbone, but this time there's more of a twinkle to his dialogue. It's tracking down his surrogate daughter Ciri that forms the crux of the main quest. But she's also being tracked by the Wild Hunt – a bunch of nasty skeletal chaps with a penchant for murder and turning everything to ice – and the whole story plays out with a monster-infested, war-ravaged country as its backdrop.

Hunting your prey is more involved and interesting than before, and frequently involves using your Witcher senses to find clues and track footprints or smells. The enemies are often truly revolting – wraiths with lolling tongues that would make Gene Simmons blush, and demon babies wrapped in their own umbilical cords – but once you know what you're up against you can prepare the relevant potions, bombs and magical signs.

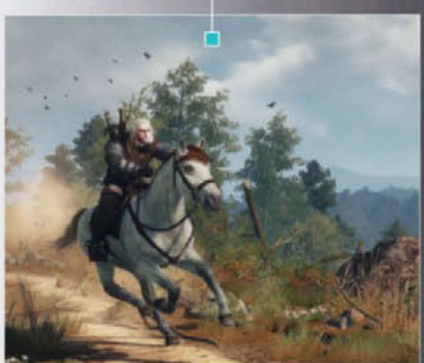
However, combat is tough even when fully prepared, and there's something fairly *Bloodborne*-like about the way you have to parry, pirouette and roll to create an opening to stick one of your two swords into. Regular saves mean failure is far less punishing than it is with *Bloodborne*, but on anything but the easiest difficulty setting you need to be prepared for fairly frequent death.

There are some flaws, mostly in the occasionally irritating AI, but *The Witcher 3* is still one of the most beautiful, involving, varied and fun games I've ever played.

Tom Parsons

STUFF SAYS Bigger than *Skyrim* and with more character, this is the new RPG benchmark ★★★★★

Your horse is a bit of wimp – if he gets spooked, you go flying



Every character has a personality. Often a really nasty one

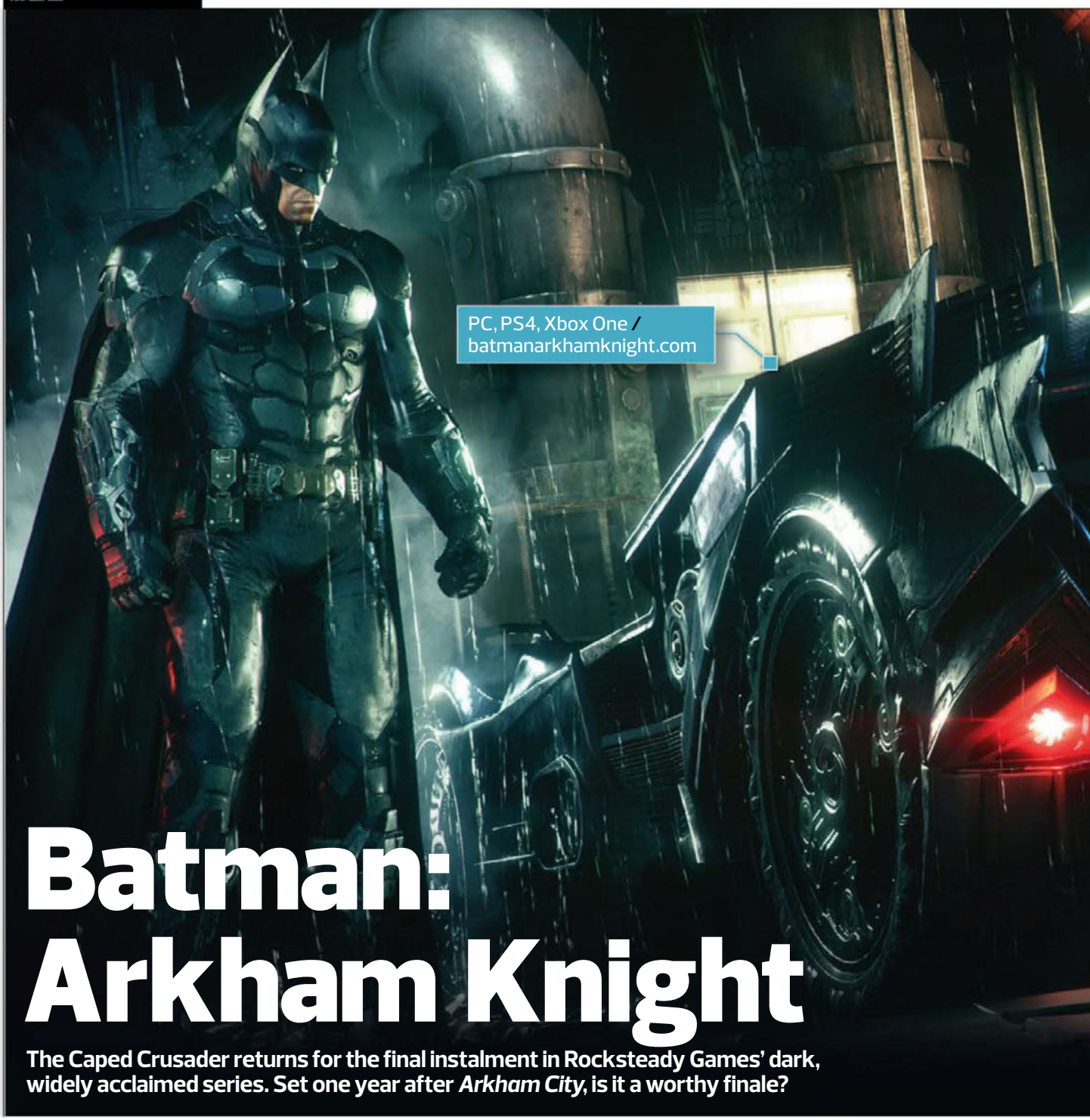
A truly massive open world

Geralt may be on the cover, but the real star of *The Witcher 3* is the map. The Northern Realms, where you'll spend most of your time, equate to a region that's vastly larger than all of *Skyrim*, and the Skellige Isles are ginormous too.

There's a lot of pleasure to be had in simply wandering these lands, such is the detail on offer. You enter settlements, some more welcoming than others, visit the inn to get the local news, maybe stumble into a brawl between the locals and the occupying army. If you want to play the vagrant, you can do just that.

But the world is also full of things to do – things with heft and relevance, rather than the irrelevant, endless collectibles of a game like *Assassin's Creed*. You take on contracts to slay beasts that are terrorising the community, find a missing loved one, or clear a house that's been overrun by ghosts. There's impressively little repetition to these side-quests – each has its own story and outcome. They're a pleasure, not a chore.

And the world is beautiful, even when it's ugly and savage, thanks to dynamic lighting and a weather system that can turn verdant fields into a sticky bog in minutes.



PC, PS4, Xbox One /
batmanarkhamknight.com

Batman: Arkham Knight

The Caped Crusader returns for the final instalment in Rocksteady Games' dark, widely acclaimed series. Set one year after *Arkham City*, is it a worthy finale?

Now that you mention it, Batman does have a fair bit in common with *Knight Rider*'s Michael Knight. They both represent corporations bearing their names, they're both good at being presumed dead, and they're both in danger of being upstaged by their cars. This is particularly true for Batman in the finale to the *Arkham* series, because the Batmobile is now very much a character. Tearing around Gotham in several tonnes of transforming tank that runs through concrete like it's wet cardboard is more than just fun. It's the most liberating experience I've had since the naked trolley dash that got me barred from Waitrose.

The vehicle changes the way you interact with the city. You bring it in remotely to assist in team fights, use it to scale walls with the ejector seat, and bring it into one of The Riddler's puzzle dungeons to help you with a conundrum. It's not so much a car as an extra limb.

But while Michael Knight (they have the whole 'knight' thing in common, too) was just a fairly normal man on foot, Batman's latest incarnation excels at stylish caped combat. And you'll be amply supplied with targets, facing a trained militia with all sorts of new tricks up its soldiers' sleeves, including thermal-imaging-resistant camouflage and pesky drones that can shock you from your vantage point.

The transitions between stealth, beat-'em-up, *Carmageddon*-style vehicular violence and puzzler are seamless, and every element feels made with huge amounts of care and attention. Of special note, though, is the plot, which brings about some clever visual and environmental techniques to showcase the best of gaming as a narrative form. The Scarecrow-induced hallucinatory sequences are without a doubt the series' strongest set pieces yet.

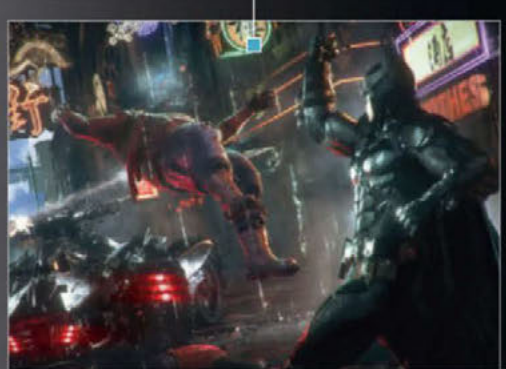
This game doesn't just have brawn, it has some serious brains to match. Top of the class.

Justin Mahboubian-Jones

STUFF SAYS Stop what you're doing, don the cape and enjoy *Batman* at its very best ★★★★★

Mini games are littered throughout; here Bruce scans a body for clues

This little trick is known as the Batmobile-assisted takedown – we approve



Batmobile, beautiful Batmobile

This is no slapdash automobile bolt-on. The Batmobile sections of *Arkham Knight* are plentiful and add a whole extra dimension to the proceedings. The car is such a character in its own right that it features its own upgrade tree system in which you can make it faster, stronger and more capable of doing even more completely unrealistic but completely awesome things.

Brucie's motor is something of a Swiss army knife, if a Swiss army knife was a hugely powerful vehicle covered in guns. It can be driven like a car, but at the click of a button it spreads its wheels, extends a barrel and becomes a tank. When in this mode it is capable of 360° motion, although it also slows down a fair bit.

It's as a bat-tank that the batcraft becomes a little less realistic and a little more fun: it can scale roofs, use a winch to pull itself up vertical walls and wreak maximum bat-havoc on the bat-tlefield. And there's plenty of havoc to be wrought: skirmishes often involve deluges of enemy rockets and swarms of enemy drones, and while the Batmobile's superior speed and firepower make it a force to be reckoned with, using it does not equate to an automatic win.

Project CARS

The visually spectacular 'Community Assisted Racing Simulation' used the cash and experience of over 80,000 gamers, but how does it drive?

PC, PS4, Xbox One / projectcarsgame.com

This is the racing sim that console gamers have been waiting for. The PC crowd has been kept fairly well supplied with hardcore simulations such as *Assetto Corsa*, but Xboxers have to make do with the fairly light *Forza* series and PlayStationers have to wait about a million years between *Gran Turismo* games. Not any more – *Project CARS* takes its racing very seriously.

But that doesn't mean it's inaccessible to more casual racers. There are assists and a racing line (complete with braking point indicators) that mean beginners can be competitive – but you do need to exercise a degree of concentration, consistency and patience that other games don't require. This is about stalking your prey, knocking a few tenths off their lead over a few laps and then sitting behind them for a few more corners, waiting for an opening.

It's super-competitive racing online with up to 16 players in each race, but set the AI skill level right (70% worked for me) and you can have real bumper-to-bumper racing offline in career mode too. And this is a career mode without experience points, unlocks or a story. Instead you choose which formula to start in – from karting to Clio Cup to touring cars to Formula A, plus everything in between – then race a season and hope you've scored enough points to be invited to move up to the next level. Honestly, combined with the quality of the racing, it's all the motivation you need.

As you get better you can reduce or switch off the assists, chuck variable weather into the equation (wet races are a fantastic nightmare) and up your opponent AI for a tougher challenge.

There are issues – getting your controller settings just right can take ages, finding a good multiplayer lobby is a pain in the backside, and elements such as pitting are so complicated they appear a dark art – but fixes are in the works. Even if those fixes never came, you'd still put up with the flaws for *Project CARS*' otherwise brilliant, beautiful racing.

Tom Parsons

Turn on the rain and you'll have a deliciously frustrating time trying to stay on the track

Want to take the traditional route to the top? Start in a kart and work your way up

STUFF SAYS Gloriously gimmick-free, *Project CARS* lets the racing do the talking ★★★★☆

Windows, Mac / kerbalspaceprogram.com

Kerbal Space Program

This stellar sim will take you to the 'Mun' and back, or further still, turning you into a one-person NASA

Don't let the cute characters fool you: *Kerbal Space Program* is serious business. It's a space exploration sandbox game that allows you to do whatever you like within its framework – it provides the tools to build spaceworthy craft and a vast solar system to jet off into from your home planet, Kerbin.

The fact that your astronauts and scientists are bug-eyed, green-skinned creatures doesn't really change the fact that, at its heart, this is a pretty hardcore sim that will seem overwhelming at times. It's quite clear from early on that you are being left to fend for yourself. This is a game about experimenting, messing up, trying again and eventually making a breakthrough.

The game's simulation of physics and aerodynamics feels, to my (decidedly non-scientific) mind, pretty dead-on. You'll want to build stable craft (rockets at first, space planes later) to avoid accidents, and use caution with the controls. Rockets are powerful, volatile things, and have a habit of exploding. Building one with enough thrust to escape Kerbin's atmosphere and remain in a stable orbit? It's bloody hard work. Taking it a step further and putting one on the 'Mun' is a feat that makes you feel as smug as an actual rocket engineer must.

Space is a big place. One of *Kerbal Space Program*'s biggest achievements is that it gives you the impression of its sheer, scary scale. In terms of presentation, it's a little rough – very much the limited-budget indie title it is – but while it might have been nice to fly over a beautiful, detailed Kerbin rather than the near-featureless planet you get, it doesn't really feel like a huge loss. The real joy of this game is in its nuts and bolts, not its visuals or sound.

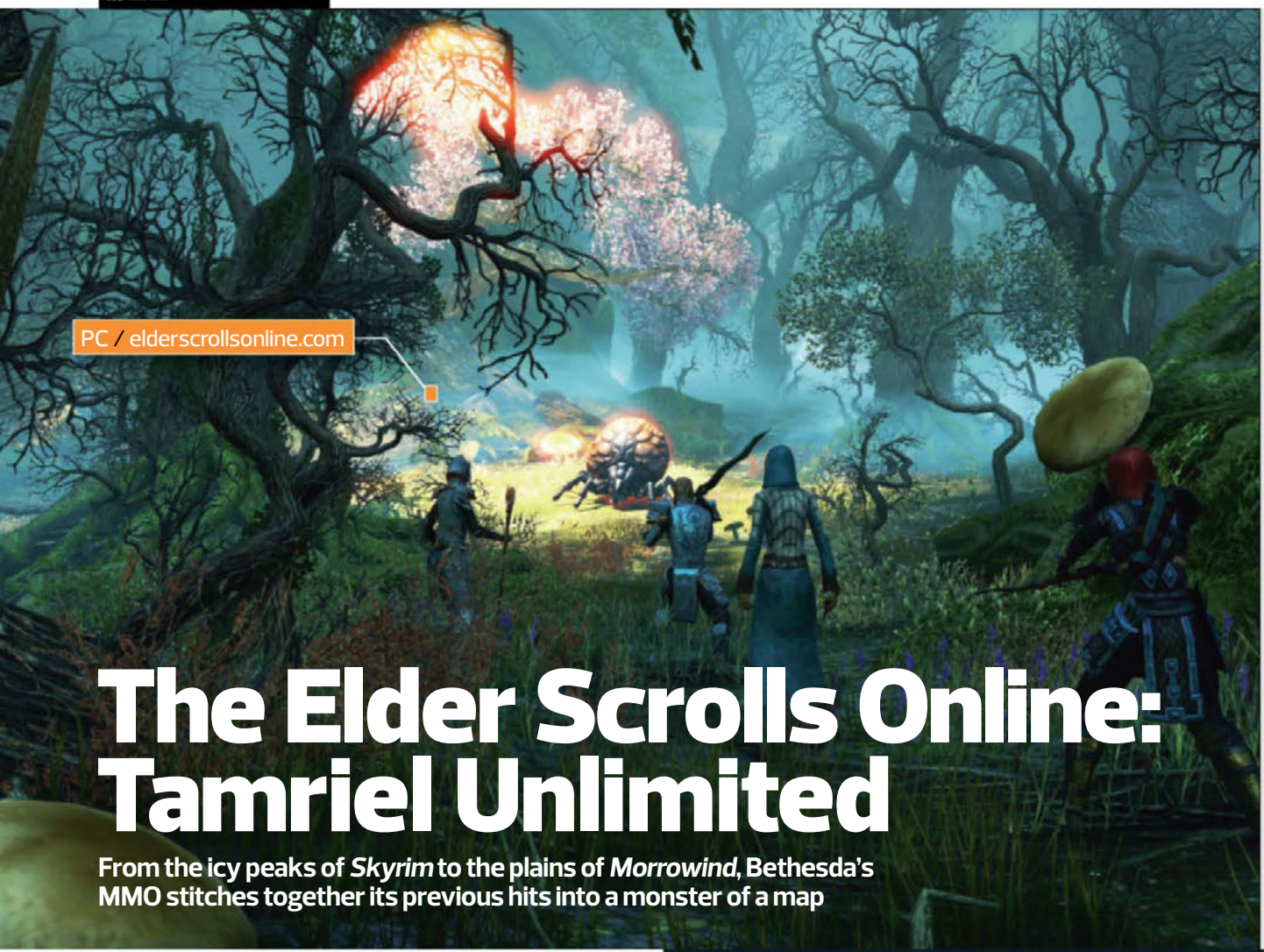
There have been space flight simulators before, but nothing that manages to feel simultaneously so fully-featured and (relatively) welcoming as this. Anyone with any interest in the extraterrestrial will love it. Now, if you'll excuse me, I have a Mun lander to build...

Sam Kieldsen

Build a range of spaceships in two different challenge modes: Science or Career

There's a toggle that auto-stabilises your craft – very helpful at times

STUFF SAYS Space sims don't get any better than this rocket-building wonder ★★★★★



PC / elderscrollsonline.com

The Elder Scrolls Online: Tamriel Unlimited

From the icy peaks of *Skyrim* to the plains of *Morrowind*, Bethesda's MMO stitches together its previous hits into a monster of a map

It's a nice idea: take the worlds from the previous Elder Scrolls games, and meld them into a Pangaean supercontinent where players can roam for years on end, exploring, fighting, stealing, crafting and getting beaten up by dragons. But while *Skyrim* fans will find some familiar material within the giant world of Tamriel, the execution doesn't deliver on the grand promise.

Half the game is a traditional MMO, in which you wander the land looking for quests, most of which take place in dungeons known as Delves. The jobs on offer are ones you've completed in many games, many times before – kill a certain number of monsters, retrieve a magical goat's foot on behalf of a magical nincompoop. It's here that the shortcomings of the vast environment become clear: to fill it, the designers have had to resort to gaming by numbers. The results feel more like work than play.

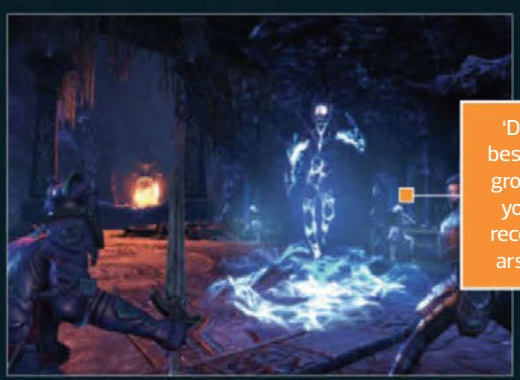
It's lacking in atmosphere, too: where *Skyrim*'s scenery and plotting brought a nerdy franchise to the masses, even the mighty Michael Gambon can't make this feel particularly magical.

The other half of *ESO* is almost entirely disconnected from the first. In Campaign Mode, players battle one another for control of the map in large-scale wars. Each player picks one of three factions, and these alliances thrash it out for dominance. This can be a fun challenge, especially when 40 players decide to storm the same objective. Unfortunately the process is not as quick or satisfying as it should be. *PlanetSide*, this ain't.

Where *ESO* does shine is in the combat and character development. Slowly developing your abilities into a combat style that suits you is satisfying, but no more so than in *Skyrim*.

If you're so in love with MMOs that you dream of hotkeys, or so deeply enchanted by Tamriel that you've drawn elves on your latest holiday brochure, then give it a try. Otherwise, there are better ways to slay your valuable time.

Justin Mahboubian-Jones



'Delves' are best tackled in groups unless you want to receive a fiery arse-kicking

The characters may not behave in interesting ways, but they sure are handsome

STUFF SAYS The Scrolls have passed through elderly, and into just plain old ★★★☆☆

GET THE BEST STUFF STORIES AND NEWS ON GIVEAWAYS NOW

E-mail address

Sign me up!

Stuff.tv

Top of the 'bots

If you're upgrading this year and you're not wedded to your iPhone, you need to read this: we've tested the best Android phones in the world and picked a winner

Here it is, then: the best phone in the world. All the big manufacturers have set out their wares for 2015, and one of these four is set to emerge as the new champion.

So if you have a contract to renew, or just $1000 sizzling a hole in your pocket and a thirst for new gadgetry, these are the names to consider.

Smartphones are still improving each year, and in all the right ways. Gimmickry has been cast aside for power, upscale design, superb cameras, and even the occasional bit of leather for those who like things a little more, er, leathery. And while there's still a lot of support for Apple's wonderphone in the *Stuff* office, it's in the Anroid arena that the real competition takes place, where new and occasionally crazy technology becomes real, and where, ultimately, you'll find the world's most advanced device. We've spent weeks obsessing over these superphones, and this is what we found out.

[**Words** Andrew Hayward **Photography** Matt Beedle]

1 HTC One M9
Could the M9 be your best M8? With a hugely improved camera, overhauled software and a nicely updated design... M-aybe.

2 Samsung Galaxy S6
Plastic has been traded in for metal and more glass than a double-glazing salesman's garage. It's the classiest Samsung to date.

3 LG G4
Leather or plastic? LG's offering an interesting choice of finishes this year, plus an even better camera than the laser-eyed G3.

4 Huawei P8
The outside bet – slim as a budgie's wrist and clad in light aluminium, the P8 is a premium superphone that costs less than the others.

1
3:12
Current location - 2/01
2
SAMSUNG
02:36
Fri, 3 January
3
AM
3:05
SUNDAY, JANUARY 11
Emergency call
Touch and hold
4
4:55
Fri, 9 May
Slide to unlock

Thinner than an iPhone 6, and a great deal cheaper

The Huawei P8 may not have the design personality or some of the final little finishing touches of the best from Samsung and Apple, but this is one fine-looking phone. What's more, it's a fine-looking phone that costs $300 less than the Galaxy S6.

This Huawei is a supremely thin (6.4mm) aluminium Android with 4G, microSD and an insanely pocketable frame. For bragging rights there's no fingerprint scanner or other such extras, but it will still impress onlookers as only a top-end phone can.

Anything to complain about? The software is quirk-central, as we've learned to expect from Huawei, and you'll want to customise it. The 'Emotion' UI embraces the wonky and weird, which you'll find either charming or confusing.

Parts of the P8's octa-core brain haven't been quite as well optimised as some of its competitors. In regular use it lasts a respectable 1.5 days, but in our video test we only squeezed seven hours out of the thing; the Galaxy S6 managed 14 hours. At other times, though, it outperforms the rest.

So, it's not great for movies on transatlantic flights. For the odd bit of Netflix, however, the battery will hold up and the solid 5.2in 1080p screen will more than do the trick. The P8 doesn't quite get the level of perfection you'll find elsewhere, but it does save you a bundle of cash.

HUAWEI P8 $699 ★★★★☆

DESIGN
Metal chocolate bar
Gold, silver, black? There's a choice of P8s, and each version is carved out of cool, hard aluminium. This phone feels pretty good, but as with any hard-edged rectangular design, it feels a bit more severe than the others. So, do you want slim or smooth?

There are big bonus points for the microSD slot, and that slim frame is impressively two-dimensional. Still, the design is derivative, there's no fingerprint scanner and no universal remote IR blaster. It does put the power button within easy reach of your thumb, though.

●●●●●●●●○○

CAMERA
Good hit rate
The P8 has a 13MP sensor with optical image stabilisation (OIS), which gives it good low-light skills. It's a reliable point-and-shoot that makes it easy to get good pictures, although colours in the finished images can be quite unruly.

●●●●●●●●○○

SCREEN
Full HD: just enough
This year some phone-makers decided they didn't need QHD resolution. Huawei was one of them. The P8 has a 5.2in Full HD screen; you get good colour, contrast and sharpness, but some of the other phones here are even stronger.

●●●●●●●○○○

OS AND APPS
Mixed emotions
Heard of Emotion UI? It's how Huawei puts its stamp on Android – version 5.0 (Lollipop) in this case. It's a bit odd, dumping the secondary apps screen in favour of iPhone-esque home screens, and adopting a strange colour scheme. You can customise it; you'll probably want to.

The supplied lock screen, wallpaper and so on made us wince, but fortunately the P8's themes make facelifts a cinch, and there are several decent themes pre-installed. So why did Huawei plaster it with such a dodgy default one?

●●●●●●○○○○

An 8MP selfie camera will render all your craggy bits in exquisite detail, although there's also a face-smoothing mode to save you any embarrassment.

This is the slimmest phone on test, at 6.4mm. Good for show-offs, especially as it's made of aluminium. A silicone case will make it thicker, but also help avoid dents.

The successor to last year's finest Android

With so many Androids out there, how do you stand out? The answer, according to LG, is to make your nice new phone look like a nice new wallet. Yes, we're talking real leather, and in a muted rainbow of colours to go with any handbag. For a bit less cash, there's also a plastic version.

Aside from its cow-flavoured coat, the LG G4 has rear buttons instead of side ones, and a 5.5in screen that's a bit more cinema-grade than the other phones here. Great for gamers, great for Netflix fans.

As a result of enjoying this screen, though, we've found the battery life to be a bit ropey. You don't have to try hard to drain it in a day. And for all the bodywork flashiness, it doesn't feel quite as classy or expensive as the Samsung or HTC rivals, especially if you have the plastic version.

So, who should buy the G4? The larger screen counts for a lot, and while the interface isn't starlet-pretty, it doesn't pull any silly moves like the Huawei. Another major plus point – especially for anyone with a big music library – is that LG has decided not to chop out the microSD card slot.

Aside from its tendency to run out of juice pretty quickly, we've had a good time with the LG G4. The camera is great, doing battle with the Galaxy S6 for the title of best phone camera this year. A decent sensor and a super-fast lens combine to work wonders every time.

LG G4 $998 ★★★★★

DESIGN

Under the leather

After the plasticky-feeling G3, LG has decided to offer a G4 that is, like our favourite turtle, a leatherback. Even the plastic version is injected with ceramic for a slightly snazzier feel. Get down to its core, though, and not much has changed.

The G4 still uses a wafer-thin backplate that doesn't feel as solid as unibody metal or glass. At least you can replace the battery easily and use a microSD slot, though. As usual for LG, the power and volume buttons sit on the back rather than the sides. It feels weird at first, but it works.

CAMERA

Sharper than cut glass

In the brutal game of Tech Top Trumps, the LG G4 just beats the Galaxy S6 with a 16MP sensor and f/1.8 lens, which give it slightly better low-light skills. In real life, though, we found the G4's camera just a little bit slower.

SCREEN

Quantum LCD

The LG G4 has an LCD screen that offers searing QHD resolution and uses Quantum Display tech to supercharge the colours and contrast. It pops like crazy. One criticism: the reds pop a touch too much for our taste.

OS AND APPS

Sub-optimal Optimus?

Just as every Android UI under the sun is going smoother and more organic-feeling, the G4's Optimus UI sticks with what it knows. It's all sharp angles, and has a couple of interface bits that aren't necessary.

It could be prettier, but it's super snappy and lets you banish any bits of bloat you don't want to see. There are some extra apps you may want to nix, but some are useful, such as the universal remote app that lets the G4 control your TV.

Overall it's nice, but with a bit of fiddling it can be better.

Just like last year, the G4 uses lightly contoured volume and power buttons on the back that can also be used to quick-start the camera.

To make the leather back, LG thins out a piece of real leather then glues it securely onto a skinny piece of plastic to keep it nice and firm.

The super-premium new face of Samsung

Now it's getting serious. After a few years of plastic phones, the Galaxy S6 is metal and glass all round. It doesn't come cheap, but this is one of the best-feeling phones we've ever used – it's pleasantly smooth, despite being a dead skinny 6.8mm thick. There are sacrifices – the S6 loses the water resistance and microSD slot of its predecessor – but this is a design to set any gadget geek's heart a-pounding.

Samsung has taken the Apple route this year, offering several S6 versions with up to 128GB of storage, and charging eye-watering prices for the more spacious ones.

With a frankly amazing screen that crams in 577 pixels per inch, a fantastic camera and improved speakers, this is the sort of phone we've been hoping Samsung would make for years. It marries all the bits they have always been good at, and packages them in a design worthy of its specs.

One real surprise is the fingerprint scanner. It divided buyers in the Galaxy S5, but this new version is an absolute treat. It works perfectly, and sits right where you want it under the Home button. Want to go to the next level? Check out the very pricey but also very futuristic S6 Edge, which adds a curved glass front that displays notifications at the edges. It's a phone of the future and no mistake.

Still, for the average buyer the vanilla S6 is still royalty, even without the microSD.

SAMSUNG GALAXY S6 FROM $998 ★★★★★

You don't have to swipe your finger across the scanner – you just rest it there, which makes it far easier to use than last year's one. Thumbs up!

There's a sensor on the back that reads not only your heart rate but also blood oxygen saturation and the UV level around you. Pretty smart.

DESIGN
Gorilla class
Finally, an expensive Samsung phone that feels like it. With Gorilla Glass 4 on the back and front, and aluminium on the sides, this phone feels amazing. It looks far better than the S5 too, although granted the camera sticks out a bit.

CAMERA
Smart shooter
This 16MP camera is fantastic. It's fast, it's sharp and low-light performance is way better than last year. As usual the HDR mode performs minor miracles, making this the best phone camera we've used so far.

OS AND APPS
A bit of a Wiz
Not everyone loves Samsung's TouchWiz UI, but it's actually one of the simpler and cleaner takes on Android. This year there are themes that let you fiddle with its looks, but at time of printing, no particularly nice ones.

SCREEN
OLED + QHD = WIN
The best phone screen we've ever seen. An OLED, QHD-res display gets you incredible contrast and sharpness. At 'just' 5.1in it's pretty restrained in size, but then the Note 4 is there for big-screen thrills.

The evolution of a modern design classic

Feeling a bit of deja vu? The HTC One M9 looks quite a lot like last year's One M8. All that lovely textured aluminium is back, making this perhaps the smoothest, fanciest-feeling Android phone of the year. It's a stunner.

This year it has a two-tone style, and comes in silver, grey or gold. HTC hasn't gone overboard with the gold one either – no bling nightmares.

One other bit HTC hasn't messed with too much is the speakers: the same pair of BoomSound front units we loved last year. Now there's a Dolby mode too, to squeeze a slightly larger sound out of them.

So what's changed? The camera is totally different. Rather than a 4MP UltraPixel main sensor, the M9 has a 20MP one. That means much bigger images, but also worse low-light skills. (The UltraPixel camera has moved to the front to take over night-time selfie duty.)

Despite having more megapixels than any other on test, though, HTC's is not one of the top cameras. It struggles with reliability, often getting its settings a bit wrong.

Next to the LG G4 and Samsung Galaxy S6 you don't quite get the same grade of screen either: this is a 1080p Super LCD3 panel. It's still great, but if you're a screen fanatic you may prefer one of those others. You pay for the ultra-premium design here, so make sure you like it.

HTC ONE M9 FROM $1008 ★★★★★

Stereo front-loaded BoomSound speakers get you the best audio quality of the lot. Although not shouty, they are richer, more refined and less strained when loud.

The back isn't just beautifully curved, it also has a very fine brushed finish to get you that extra hit of quality.

DESIGN
Luxury time
It's not super skinny or particularly small, but the HTC One M9 looks and feels great thanks to its luxuriously curvy back. There's a microSD slot, but no fingerprint scanner nor bonus bits. It cares more about acing the basics.

CAMERA
Meter problems
Awesome megapixel specs aside, the M9's camera needs some know-how to get the most out of it. Make the effort to learn to use it and you'll get great shots, but it's not foolproof. The 4MP selfies are superb, though.

OS AND APPS
Talking Sense
HTC Sense is back, this time with themes. It's starting to seem pretty dated in parts, having looked the same since 2013, but it runs like a dream, and you can customise themes with colours from your photos.

SCREEN
Big enough?
With the smallest screen of the lot and a resolution we now see in much cheaper phones, the M9 isn't immediately impressive. The difference isn't all that great, but you want the best when you're paying $1000-odd, right?

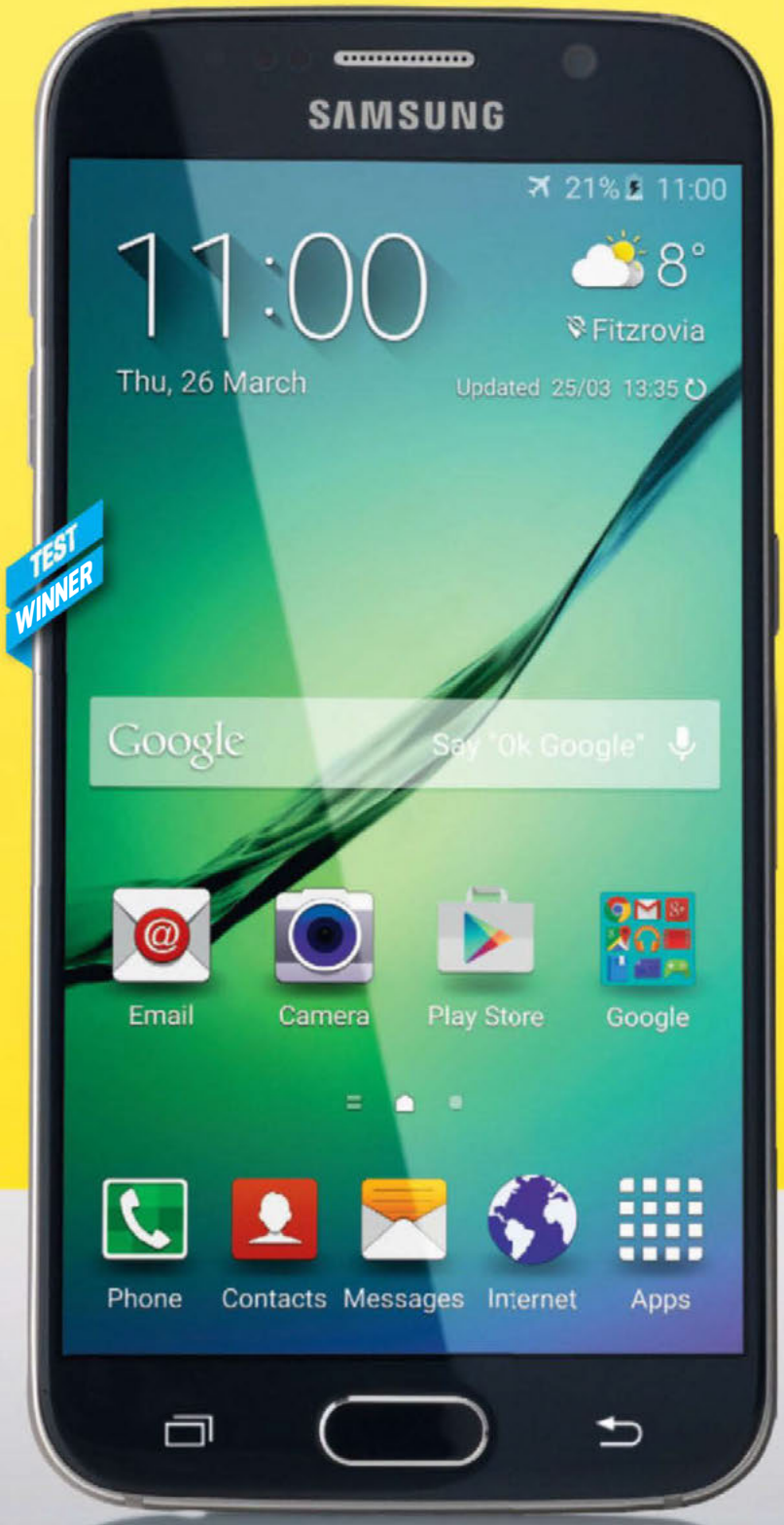
The winner is...
Samsung Galaxy S6

There's no doubt in our minds with this one. The S6 just gets so much right, with virtually no elements that feel like they could have done with a bit longer in the oven.

Camera, screen and build all ooze confidence and quality. This is a phone you'll be proud to keep in your pocket.

The only issues, and they are minor, are those bits where Samsung has been a bit too confident. Did it really have to get rid of the microSD slot? The money men undoubtedly said yes, but everyone else will wish they hadn't.

Battery life is also, well, normal. Not bad, but not amazing. However, it's not often we see a phone hit as many bullseyes as it aims for. This is the finest phone you can buy today.



Now add these

Samsung Galaxy S6 Clear View Cover
A see-through case? That's right. The Clear View is a flip cover with a translucent, semi-metallic finish to the front that lets you see your notifications without opening it up.
$48

Samsung Edge Wireless Charging Station
One of the hidden extras of the S6 is Qi and PMA wireless charging. This low-cost wireless charging dock makes plugging in a thing of the past.
$98

Withings Activité Pop
Not all smartwatches look like phones trying to fit onto a strap. The Activité Pop tracks your steps and monitors your sleep, syncing the results with a nifty Android app.
US$150 ($205)

THE SUMMARY

● S6 ● LG ● HTC ● P8

WHAT'S NEXT?

One thing none of these phones really aced is battery life. Sure, some of them charge up super-quick, but you can drain any of them in a day. There are a handful of amazing battery techs being worked on right now, from ones that charge in seconds to those that last for weeks. We can't wait.

But what about the near future? HTC has already announced an even higher-end version of the One M9, the M9+. It has a QHD screen, although it's only heading to China at the moment.

There are also a few side contenders you might want to consider waiting for. The Galaxy Note 5 is likely to show up later this year and OnePlus is already talking up its Two phone... although you may have to beg for an invite to buy one if the OnePlus One is anything to go by.

So should you wait? Only if you want a much bigger phone, or a significantly cheaper one.

follow Andrew:
@wwwdotandrew
email Stuff:
stuff@haymarket.com

		Screen	Processor	Cameras	Storage	Battery	Dimensions
1st	**Samsung Galaxy S6** The S6 finally aces what Samsung has always struggled with: design. It's the new benchmark for flagship phones. **from $998 / samsung.com/sg**	5.2in 2560x1440 OLED (577ppi)	Exynos 7420 octo-core 2.1GHz	16MP rear, 5MP front	32GB, 64GB, 128GB (no microSD)	2550mAh	143x71x 6.8 mm, 138g
2nd	**LG G4** Big screen, impressive camera and optional leather back. It's not a revelation, but it's great. **$998 / lg.com/sg**	5.5in 2560x1440 LCD (538ppi)	Snapdragon 808 hexa-core 1.8GHz	16MP rear, 8MP front	32GB (plus microSD)	3000mAh	149x76x 9.8mm, 155g
3rd	**HTC One M9** Not every change is golden but the gorgeous, effortless design still makes it a winner. **from $1008 / htc.com/sea**	5.0in 1920x1080 LCD (538ppi)	Snapdragon 808 hexa-core 1.8GHz	20MP rear, 4MP front	32GB (plus microSD)	2840mAh	145x70x 9.6mm, 157g
4th	**Huawei P8** Huawei has earned its place in the big league with the P8. It's not perfect, but at this price it's well worth a look. **$699 / huawei.com/sg**	5.2in 1920x1080 LCD (424ppi)	Kirin 930 or 935 octo-core 3GHz	13MP rear, 8MP front	16GB, 64GB (plus microSD)	2680mAh	145x72x 6.4mm, 144g

TWELVE EXTRA LIVES

Explore a mutant-infested America, make your own Mario world and conquer an almost endless universe... you'll do all of this and more in the best 12 games of the next 12 months

HOTLY ANTICIPATED INDIES

Inside

This hails from the studio behind 2010's marvellous side-scroller *Limbo*, which is enough to get us interested. The mysterious teaser trailer oozes both style and a sense of dread. And what's inside that vat at the end? It should be a memorable journey.

The Witness

Braid remains one of the gold standard indies of the past few years, and creator Jonathan Blow has since been crafting this miraculously beautiful first-person puzzler. *The Witness* finds you exploring a stunning island covered with puzzles, mazes, and audio bits for you to decipher.

Mighty No.9

It looks like *Mega Man*, plays like *Mega Man*, and comes from the creator of *Mega Man*, but *Mighty No.9* isn't *Mega Man* – it's made by a different studio. Capcom has abandoned the Blue Bomber so his designer Kickstarted this spiritual successor, a reimagining of the formula.

PS4, Xbox One, PC / 2016

No Man's Sky

When you stop and think about it, it can be difficult to comprehend the size of our universe. It's always bigger than that big thing you've just imagined. Yep, even that. So is indie cosmos-'em-up *No Man's Sky*. Its procedurally generated planets make *The Witcher 3*'s Northern Kingdoms look as cramped as a sumo match in a phonebox – before you even consider that each one exists within its own solar system, within its own galaxy.

You can go wherever you want, though sometimes you'll be restricted by your equipment. Your ship or suit may need to be upgraded to visit toxic or radioactive planets, which you can do by collecting credits through mining materials, discovering new species or attacking and looting other ships and outposts.

What's the eventual aim? The makers won't say, but there will be a reason for you to aim for the centre of the universe. What you'll find there is anyone's guess. God? The meaning of life? Or an old man with a monolith at the end of his bed? It won't be long until you can find out...

PS4, Xbox One, PC / November

Star Wars: Battlefront

With the first new Star Wars film since *Return Of The Jedi* due at the end of the year (*The Phantom Menace*? *Revenge Of The Sith*? Nope, never heard of them...) we were fully braced to be disappointed by the inevitable tie-in game – but *Battlefront* is shaping up to be anything but a lazy cash-in.

For starters it embraces the Star Wars universe at the time of the original trilogy, rather than focusing on the newest film (although a *Force Awakens* DLC pack will be available shortly after the film's released), so it immediately appeals to everyone who's ever had an imaginary lightsaber fight, whether they're five years old or 45.

But what really hits you is how well Dice has recreated that world. The team had access to original props and materials from the films, plus they visited locations around the world that were used for filming, scanning everything in 3D in order to create accurate models of them within the game – and that's a big part of what sucks you in as soon as you hear the first volley of blaster fire.

Battlefront will have a single-player mission, but the focus is very much on multiplayer, with 12 maps across four planets. We've had a bash at two of them (see below) – and *Battlefront* is already looking to be the definitive Star Wars videogame.

ON THE DARK SIDE

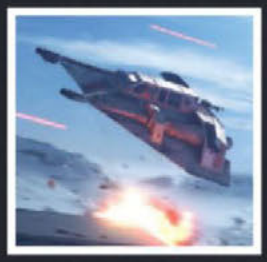
Clad in the white armour of a stormtrooper, assuming it would offer some camouflage against the snowy backdrop of ice planet Hoth, we stepped into a 20-a-side battle, TIE Fighters screaming overhead and a giant AT-AT plodding by. The *pew-pew* of blaster fire rang out and we dropped dead. It doesn't get much more Star Wars than that.

Having respawned, we pressed on, now using boulders and trenches for cover – and trying not be to distracted by the incredible graphics and those familiar characters. Even the most finicky Jedi fan will struggle not to be impressed.

Our job was to protect the AT-ATs while making sure the scattered uplink stations were kept out of rebel hands. As in the *Battlefield* series, wins rely on teamwork rather than straight-up kills, and Dice (the same dev makes both titles) has nailed the sense of being just a single part of a much larger battle.

You can, if you're lucky, pick up power-ups that are dotted around the map. We managed to get behind the controls of an AT-ST Walker and kill off a few enemies with a barrage of rockets. But that firepower comes at a price. It was slow and tricky to manoeuvre, and left us rather exposed to attack.

Towards the end of the demo we experimented with switching between first- and third-person views. While the latter is good for keeping tabs on your surroundings, seeing through the eyes of a stormtrooper just felt more natural. Perhaps we do have designs on ruling the galaxy, just like that therapist told us all those years ago...



ON THE LIGHT SIDE

Later on in the same galaxy, but on a warmer Tatooine, we tried the two-player co-op Survival mode, playing as the Rebellion. It's essentially a horde-style game in which you fight off waves of increasingly strong AI stormtroopers.

We dispatched the first few quite easily, but when a tougher foe appeared – a stormtrooper with flashes of red on his armour – things began to heat up. Literally. Blasters don't use ammo clips so there's no faffing around with reloading in *Battlefront*. Instead, guns overheat with prolonged use, forcing you to wait a few seconds before being able to fire again; some last longer than others.

You're also equipped with a jetpack, which has enough charge to reach higher plains or simply to scarper from a gunfight that you might not be winning.

Before long, they sent an AT-ST our way. Of the two loadouts available we'd picked the one with a seeking rocket launcher, and a few direct hits later our two-legged friend was a mass of mangled metal lying on the dusty floor.

You travel light; apart from a rechargeable shield that will protect you from damage for a while, that's pretty much the extent of your gear, but this isn't meant to be gun-obsessed war-porn like *Call Of Duty*. It's Star Wars.

Unlike the 40-person multiplayer, there are no unlimited respawns. You can grab extra lives when you find them, but if you run out it's up to your partner to fight off the enemies and complete the round before you can come back. If you both run out of lives, it's time to join Obi Wan in the big Cantina bar in the sky. Game over, young Padawan.

Character assassination

Collect the right power-up in one of the battles and you'll respawn as one of Star Wars' most iconic characters. Luke, Vader and Boba (Fett) have all been announced as playable so far, but the one we're holding out for is Admiral Ackbar. No matter what button you press, all he'll ever do is bark: "It's a trap!"

PS4, Xbox One, PC / 2016

Deus Ex: Mankind Divided

If it ain't broke, there's no need to augment it with enhanced vision, wall-smashing punches and a cloaking device – but despite *Deus Ex*'s attitude towards self-improvement, *Mankind Divided* doesn't appear to stray too far from the formula that earned it *Stuff*'s full five stars (even if the boss fights were a pain in the backside).

It's 2029, and protagonist Adam Jensen is back in the starring role. After the conclusion of the last game, which saw the transhumans of the world sent into a violent rage, the natural humans of the world are widely against their semi-robotic counterparts, who've been shunned by the rest of society. Jensen is working with Interpol to track down transhuman terrorists, and he still wears shades at night. Perhaps he's in a band or something.

In the years since 2011's *Human Revolution* a number of extra augmentations have been developed for Jensen to stash up his sleeve (or wherever else he can find space), including an arm-mounted gun and an obsidian defence screen called a Titan Shield.

The main *raison d'être* of *Deus Ex* has always been freedom of choice, so expect to see the effects of the way you choose to approach the game, whether that's silently sneaky, or all guns blazing.

ALTERNATIVE SHOOTERS

Halo 5

Halo: The Master Chief Collection will tide over series fans with HD updates, but this autumn is when the FPS sensation makes its new-gen leap. The multiplayer beta introduced major tweaks to the competitive formula, and *Halo 5*'s 60fps engine ought to make for a serious Xbox One showcase.

Call Of Duty: Black Ops III

There was a new *CoD* coming, and it was Treyarch's turn, so *Black Ops III* it is! Blops the Third will introduce four-player co-op for the campaign, plus you can play as a woman. Because now ladies are allowed to die needlessly for the powers that be as well. Yay equality!

Tom Clancy's Rainbow Six Siege

Siege looks far more interesting than *Rainbow Six Patriots*. In two teams, the attackers try to rescue the hostage while the defenders try to stop them. Destructible environments allow you to turn floors into doors using C4 and drop in from above.

It was already 2029, but Jensen was still waiting for his kitchen extension to be completed

This fella is called Trico; we asked, but Pets At Home were all out of them

PS4, Xbox One, PC / 2016

The Last Guardian

Way back in 2009, Sony showed off a game called *The Last Guardian*. It'd already been in development for two years and at that time we were still firmly in PS3 territory – the PS4 was four years from even being announced. And then... nothing. The small boy and his dog-eagle-cat-thing disappeared and developers Team Ico fell silent.

But *The Last Guardian* is finally back. The little boy is still unnamed, but we now know that the dog-eagle-cat-thing is called Trico. Where his emerald green horns came from – and who removed them – is anyone's guess, as is much of the overall storyline. We have, however, seen a sequence not shown to the public that involved the pair escaping from a cell-like room within the ruined city that holds them captive.

The makers explained that their aim is to blend the companionship of *Ico* with the giant creatures of *Shadow Of The Colossus*. The original hand-painted style remains, and that's vital in recreating the wonderful ethereal quality that made those earlier games so easy to get lost in; plus it retains the sense of height that makes those leaps across chasms such heart-in-mouth moments.

It might have been nearly ten years in the making, but *The Last Guardian* is shaping up to be worth the wait.

WORKING BACKWARDS

The Last Guardian was meant for the PS3, but it's been so long in development its eventual home will be the PS4. So what if you've got other old-gen games you still want to play? Some are available on the PlayStation Store, but Microsoft has stolen a march on Sony and finally added backwards compatibility to the Xbox One – something that many gamers have clamoured for from the beginning.

Microsoft's list of compatible games is short – 21 so far – and the highlight is *Mass Effect* (above). Still, the feature doesn't launch until autumn so there's time for it to expand.

However, after the success of remastered versions of last-gen games like *GTA V* and *The Last Of Us*, some developers might rather tap into the extra cash available through sprucing up their old titles, rather than missing out by allowing Microsoft to simply make them compatible with the newer console. Only time (and take-up) will tell.

PS4, Xbox One / October

Rock Band 4

Just as *Guitar Hero* embarks on its own reunion tour, so too does Harmonix's *Rock Band*. Whereas its competitor has opted to reinvent itself with live video crowds and a two-layer button layout on its plastic axe, *Rock Band 4* seems (mostly) content with reliving the glory days and bringing the classic party experience to new consoles. Not that we're complaining.

If *Rock Band 3* seemed a little overstuffed with its keyboard controller and little-appreciated focus on musical instruction, *Rock Band 4* is all about stripped-down fun: it's guitar, bass, drums and vocals jamming in unison to a massive setlist of licensed tunes. Given the good few years since we enjoyed the last-gen entries – and spruced-up graphics aside – you could've convinced us that it was the exact same game.

But there is meaningful stuff to be found, mainly with the new freestyle guitar solos. Rather than matching up exact notes coming down the chart, you can simply wail out whatever wild widdles pop to mind, and Harmonix says the game does its best to make you sound more Jimmy Page than Jimmy Cricket no matter the input. Multi-part vocal harmonies make their way over from *The Beatles: Rock Band*, so backing singers are a welcome (optional) addition.

That old-but-new approach extends to the hardware as well. The instrument controllers look identical to the previous ones, but there are worthwhile tweaks: they're sturdier and more solid-feeling, plus the microphone is better at picking up your lyrical handiwork. But if you have the old instruments stored away, those will work fine – PS3 to PS4 and Xbox 360 to Xbox One, of course. (Harmonix pulled off a mighty feat, but they can't perform cross-platform miracles.)

Same goes for past music: almost all of the old downloadable songs and on-disc tracks will carry over into *Rock Band 4* across console generations, while the full new soundtrack includes bangers from Jack White, The Who, Fleetwood Mac and Queens Of The Stone Age, with plenty more yet to be revealed.

Reviving the old band could be a pricey proposition if you didn't hold onto your plastic guitars: the full bundle is US$290 ($340). But as ever, *Rock Band 4* is an absolute blast, and it could be worth the investment to reignite your social (gaming) life.

ALTERNATIVELY

Guitar Hero Live
due October

Activision has ditched cheesy animation in favour of live action but the big development is *GHLive*'s axe. It has two rows of buttons at the top of the neck, which will take some getting used to but could be that bit more satisfying to master.

Do your best David Bowie impression (minus the face paint and skin-tight leggings)

Is this what our post-nuclear world will look like? Best get stocked up on Super Noodles

PS4, Xbox One, PC / November

Fallout 4

It's been 200 years since you entered Vault 111. Your wife and kid are nowhere to be seen, presumably killed in the nuclear war that led to your confinement, although on venturing outside and back home you discover that your helpful robotic nanny has survived and still recognises you – it'll even say your name (Bethesda has programmed in thousands).

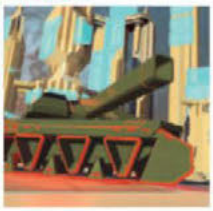
There's also the faithful hound from the trailer – and while it can't say your name, it can be commanded to go to certain locations, collect stuff and attack enemies.

The famous VATS system also returns, allowing you to pause time, pick a specific body part on an enemy and take a shot at it. It's one of things that makes the series different, and that bit more tactical than other RPG-tinged shooters.

So far, so *Fallout* – but then things go a little bit *Minecraft*. Where *Fallout 3* allowed you to change the decor in your post-apocalyptic abode, in *Fallout 4* you'll be able to build a whole house. Or an entire settlement. Make it good enough and other people, including well-stocked traders, will move in.

All the post-apocalyptic detritus you gather can also now be reclaimed and used to customise your Power Armour and weapons, to the tune of thousands of variations for each one.

WHAT'S NEXT IN VR



Battlezone
PS4

It might be a VR remake of the 1980 Atari classic, but don't expect to don a Morpheus headset and see the original green and black wireframe graphics. This reboot is in full technicolour, so your tank-based battles will have a *Tron*-esque feel. In fact, can we have a *Tron* game for Morpheus next please, Sony?

Adr1ft
PS4, Xbox One, PC

Essentially a twist on Oscar-winning film *Gravity*, *Adr1ft* sees you waking up alone on a wrecked space station. With limited oxygen and minimal resources, you must float through the wreckage and piece together what happened so you can find a way back home. It's coming to consoles, but we'll wait to play it on Oculus Rift.

RIGS
PS4

In this deathmatch two teams of three in Transformer-like mechs battle it out in a vast, multi-layered arena that gives the game a feeling of *Titanfall* crossed with *Unreal Tournament*. It's all part of an organised 'Mechanized Combat League' – and if this is what sport will be like in the future, then sign us up for a season ticket.

PS4, Xbox One, PC / February 2016

Mirror's Edge: Catalyst

With its slick, first-person parkour gameplay, the original *Mirror's Edge* was a refreshing change of pace from run 'n' gun shooters – but it remained more a fleshed-out concept than a real, feature-packed world.

Seven years later and *Catalyst* is here to build on those foundations. It focuses on Faith, the protagonist whose red shoes we slipped into before, and takes place in the same unnervingly clean, dystopian city whose inhabitants are numbed by consumerism and ruled by fear.

Your first test of the controls is when Faith escapes from the futuristic law enforcement officers. It's simple on paper: tap the left bumper for any upward movements like jumping (or hold to run along walls), and use the left trigger for downward movements like sliding or rolling before landing.

In reality it took five minutes before we were chaining moves together fluidly, but after falling to our death a few times, we found a satisfying rhythm, leaping over a fence, running along a wall and vaulting off an air duct before rolling to safety.

Whereas before you were limited to sectioned-off rooftops, in *Catalyst* the whole city is your playground. You can run over and through buildings, and even take to the streets. There are no loading screens, with seamless transitions designed to keep you moving at all times. That last part is important, as Faith is essentially immune to damage for as long as she's in transit.

Combat itself is easy to master, needing only two buttons to open up a serious can of whoopass. From drop-kicking enemies in the face to delivering head-spinning moves, it's impossible not to smile as you out-gun the bad guys without pulling a single trigger.

You can put your fighting skills to the test in Security missions, which see you delivering information across the city while the law does its best to stamp you out. Or try Billboard Hack, which involves climbing over overhanging propaganda posters then destroying them to display your own tag.

But Dash mode is where the hardcore freerunners will spend most of their time, trying to shave vital milliseconds off their A-to-B times. Failing all that, you can run around exploring the vast playground at your disposal, creating your own death-defying entertainment as you go.

No guns allowed: use your environment, agility, momentum and distracting footwear

Wii U / September

Super Mario Maker

Mushroom, turtle, another mushroom, flower, topped with a Bullet Bill. It might sound like the ingredients of Heston Blumenthal's latest creation, but it's actually an insane tower of enemies that Nintendo wants to let you build, fine-tune, and eventually challenge your friends with on *Super Mario Maker*.

And it's not just the enemies you can tinker with. Using a simple set of level-building tools, players can construct their own 2D Mario worlds. The Wii U's touchscreen and stylus mean you can easily pick up and rejig items, and choose between the 8-bit or shiny HD graphical styles from opposite ends of Mario's long Nintendo career. You can also jump in and out of edit mode as you play, so if you encounter a bit that you've made too hard (or too easy) you can immediately chuck in a few extra Goombas.

If you don't think your skills are quite up to scratch, there'll be 100 pre-made levels, plus you'll be able to download those made and shared by others.

If nothing else, you can finally answer those questions that have been keeping you awake for years. What happens when you stick a bomb on a Koopa and plonk it under water?

PS4, Xbox One, PC / 2016

Doom

Having successfully resurrected *Wolfenstein* last summer, Bethesda is bringing back another daddy of '90s shooters.

Much like *The New Order*, the new *Doom* won't concern itself with the niceties of modern first-person shooters or hybrid RPGs. There'll be no waiting for a chance to take a clean shot, or stopping to take a breather while your health bar fills back up to maximum – this is relentless, bullet-spraying chaos that rewards speed and maintaining momentum. Cowering behind a wall is wasted time that could be better spent heaving a chainsaw into a demon's face.

This is a reboot rather than a remake, so some weapons and enemies from the original will return alongside new ones that will hopefully retain the same levels of subtlety as the BFG-9000. Just don't tell your mum what it stands for.

Doom looks charmingly brash, but that doesn't mean it'll be brainless. Its SnapMap mode is a level editor that'll allow you to make and share your own maps for the multiplayer mode, even opening up the game's rules of logic to create whole new modes. Think *Minecraft* reimagined by Slayer.

PS4, Xbox One, PC / March 2016

Uncharted 4: A Thief's End

With Lara Croft back on the scene, Nate Drake can't afford to sit around watching Dion Dublin in *Homes Under The Hammer*, reminiscing with Sully about the good old days – and with the power of the PS4 to exploit, Naughty Dog's first next-gen *Uncharted* game is shaping up to be a spectacular finale to the series.

The return of Drake's older brother Sam, long presumed dead, brings our hero out of retirement; and while over the course of the game the intrepid adventurers are sure to take in any number of globe-spanning locations in pursuit of the pirate treasure they seek, what Naughty Dog has shown so far takes place in spectacular tropical locations, the most recent including a dramatic car chase through a Madagascan hillside town. This will be the first time Drake has driven a car (perhaps he struggled with three-point turns), or indeed used a grappling hook to deliver swinging attacks, like a monkey with an attitude problem.

So will it really be the end for Drake? If Naughty Dog kills him off at the end, it would take some sort of misguided flashback or reincarnation game to carry on... but can you honestly see Sony letting him go that easily?

ALTERNATIVELY

Rise Of The Tomb Raider
Xbox One, Xbox 360

Prefer your adventurers to come without a Y chromosome? Lara Croft also returns soon (November, in fact) in a snow-covered search for a lost city in Siberia. Xbox One owners will get it first, so they can lord it up over smug *Uncharted* fans, at least for a while.

PS4, Xbox One / October

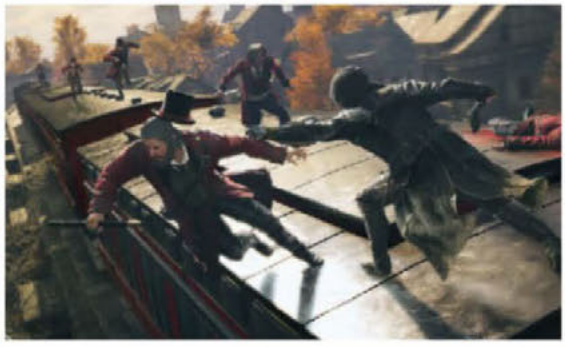
Assassin's Creed Syndicate

It begins in a very familiar place: a London pub. No, it's not *Stuff*'s Monday morning meeting, it's *Assassin's Creed Syndicate* – the first *AC* game to be set in Britain. Unfortunately there's no time for a pint – we're quickly out into the streets of Victorian London, nearby factories pumping black smoke into the sky, the roads busy with horse-drawn carriages.

It's 1868 and we've slipped into the long black coat and top hat of Jacob Frye – a kind of action hero Russell Brand. His sister Evie is also playable but for now we're scaling the walls as Jacob in that familiar *AC* way, the added power of the PS4 meaning you can really pick out the handholds in the intricate architecture. The Industrial Revolution is in full swing, and with the capital growing rapidly the wooden scaffolds make the rooftops even more accessible.

Jacob also has another trick: a rope launcher. Our mission is to reach a rival gang's stronghold and eliminate them. We fire a rope up to a nearby rooftop and disappear into the air like some sort of Dickensian Batman.

AC vets will be familiar with what happens next. Having stalked across the skyline, using the zip-wire to bridge the bigger gaps and spotting landmarks from St Paul's to Blackfriars station, we use Eagle Vision to survey the area. Members of the hilariously named Blighters gang glow red. There are 10 of them, with hostages who will be killed if we're detected. We fire a hallucinogenic dart into a fire that a trio of Blighters have gathered around for warmth, sending a cloud of noxious gas into the air, causing them to turn on each other. While two fight it out, a blade to the neck takes care of the third.



Having switched the top hat for a hood to signify added stealth, we clear the remaining seven with varying levels of sneakiness, resorting to a pistol for the final one and securing the area as a safe place on the map.

But before we have a chance to move on, the gang's leader Bloody Nora (yes, really) arrives and a chase ensues, hijacking a horse and carriage to race through the busy London streets. It ends with a mass brawl, from which we emerge victorious (natch), and sister Evie joins Jacob to declare to all within earshot that they are now part of the pair's workforce. Will there be a pension plan included?

"Cor blimey, Guv'na! You've gawn and got claret all over me best stabbin' jacket!"

Xbox One / September

Forza Motorsport 6

Forza Motorsport 5 might have been the shimmering jewel of the Xbox One launch line-up, but for all its graphical bluster, the racer felt a bit dry and borrowed a little too heavily from earlier games. Those are forgivable complaints for the first new-gen entry, but not the next. Luckily, Turn 10 Studios' latest effort should right any wrongs.

No doubt, *Forza 6* delivers strength in numbers – starting with the 450+ cars, which is double the last count, plus they're all fully viewable in the stunning Forzavista mode. Want to walk around your virtual ride or examine the stitching on the leather steering wheel? Feel free. The new Ford GT leads the line-up, but the array of licensed manufacturers is huge.

Forza 6 also bumps up the track count to 26, a serious upgrade over the 14 seen in *Forza 5*, which got old too soon due to limited locations. Daytona International Speedway and Brands Hatch are standouts, but the real attention-grabber is Rio de Janeiro with its tight, winding city streets and eye-catching sights. It really shows off *Forza 6*'s graphical upgrades, which is impressive given how stunning the last game was.

But it's not all about graphical pop. We had a go at two of the big additions being worked into *Forza 6*: inclement weather and night racing. Thanks to fully rendered puddles – yes, 3D puddles, the future is truly great – you'll lose some control by blasting through the wet stuff. It felt overly punishing, but we'll take Turn 10's word on the level of realism.

Racing at night adds a thoroughly tense element to the action, making defensive driving even more essential as headlights provide most of the illumination, particularly in the terrifying tree-lined back section of Le Mans.

Forza's impressive driving model is well established across its decade-long career, so aside from those additions, don't expect too many surprises – there are no bonnet-mounted bazookas or ejector seats. But that's no problem: the core racing is impeccably refined and entertaining, and most of the complaints from the last game had to do with simply wanting more. *Forza 6* seems poised to address those gripes with its beefier garage and track line-up, plus a potentially vast new Stories Of Motorsport career. Tried and true isn't a problem when the racing is this fantastic.

Night-time driving and British-style weather have been included to add an extra layer of challenge

The Ford GT is just one option in a stable of over 450 cars (please don't drool on the bonnet)

AND BEYOND

PS4

Horizon: Zero Dawn

We've never been that enamoured with Guerrilla's overly linear *Killzone* games but *Horizon: Zero Dawn* looks to be another kettle of robot snakes. *Zero Dawn* features a huge open world inhabited by robotic animals, giving it the feel of a mechanised safari park. As it turns out it's actually Earth but nature (working with some rogue evolving technology) has reclaimed the cities, hence the organically high-tech feel; and if it plays as well as it looks this is a world we're keen to start exploring in more detail.

Gears Of War 4

Xbox One

As the fifth *Gears Of War* game in the series, this one will be called *GOW4* (obviously). Marcus Fenix has gone, replaced by a chap called JD. He has a slightly less impossibly deep voice, but a similar penchant for moving lots of bullets very fast from inside his gun to the inside of anything that's trying to kill him.

Unravel

PS4, Xbox One, PC

A side-scrolling platformer that's reminiscent of *Little Big Planet*, *Kirby* and a less nightmarish *Limbo*. The knitted protagonist, Yarny, unravels as he goes, so you have to make it to the end of each level using the wool to bridge gaps and lasso fish to pull you across water, without getting in a tangle and running out of yourself.

Tom Clancy's Ghost Recon Wildlands

PS4, Xbox One, PC

With early plays of *The Division* not quite matching the initial excitement, *Wildlands* looks like a promising backup. Equally impressive free-roaming combined with a much grittier, contemporary setting seems like a solid recipe for success in this open-world shooter.

For Honor

PS4, Xbox One, PC

It wasn't all games with a '4' in their name at E3. Ubisoft's *For Honor* allows you to play as a samurai, medieval knight or Viking and focuses on precise one-on-one combat. Rather than button-bashing you will need to position your blade and time your strikes properly, not just swing it around like you're trying to behead a wasp.

South Park: The Fractured But Whole

PS4, Xbox One, PC

Say it out loud. Yep, this is a *South Park* game all right. Despite saying they'd never make another video game, Stone and Parker are on board again, so expect Cartman, Kenny and co's superhero story to be as wildly inappropriate as the TV show. We wouldn't expect anything less.

Mass Effect: Andromeda

PS4, Xbox One, PC

Despite having no number in the title, *Andromeda* is essentially *Mass Effect 4*. It takes place long after the original trilogy, although puzzlingly you won't be playing as the character in the announcement trailer. The biggest question: how does it get around the rather final ending of *Mass Effect 3*?

Media hoard

Gunmen old and new, spacecraft real and imaginary, and music soft and crunchy make up this month's crop of aesthetic offerings

WATCH

Slow West _cinema

In the directorial debut of John Maclean (he of Beta Band fame), Kodi Smit-McPhee plays Jay, a well-to-do Scottish teenager with an accent that wanders almost as much as his feet. *Slow West* joins him at the start of a trek across America to find the girl he loves, who has been forced to flee with her father for reasons that are revealed through flashback. Jay is soon joined by bounty hunter Silas (Michael Fassbender) who, unbeknown to the boy, is also after the pair.

What follows is essentially a road movie from a time before roads, taking in some of the most breathtaking scenery New Zealand has to offer in its role as the American outback. But while almost every background could be an oil painting, this is an ugly world in which second-hand coats come with bullet holes and bloodstains.

On the way the unlikely duo's blossoming bond is tested by, among others, a sniper disguised as a priest and the fur-coat-wearing, absinthe-drinking Payne (Ben Mendelsohn). At times *Slow West* has a fairytale feel to it, complete with thick forests and lone cottages that Payne's pack of snarling vigilantes threatens to blow down. These Coen-style quirks make *Slow West* memorable, and make up for its only half-explored ideas around the treatment of Native Americans.

Tom Wiggins

STUFF SAYS ★★★★☆

American Sniper _Blu-ray, DVD, VOD

It's more patriotic than an overweight bald eagle driving a Mustang with a stars'n'stripes paint job but, some dubious and overly simplified politics aside, *American Sniper* is a gripping tale of the US military's deadliest marksman. All the same, it's difficult to shake the feeling that there's a more interesting story to be told.

Tom Wiggins

STUFF SAYS ★★★★☆

Blackhat _Blu-ray, DVD, VOD

This stylish tale of hackers hacking hackers seems a tad simplistic at times but it dodges most cybercrime clichés. Chris Hemsworth is a binary-code Bourne, equally happy armed with a gun as a keyboard – and it's his trigger finger that becomes his key asset. Given the potentially dry subject matter, that's probably for the best.

Tom Wiggins

STUFF SAYS ★★★☆☆

LISTEN

My Love Is Cool_Wolf Alice

When grunge ruled the world in the early '90s the four members of Wolf Alice weren't even born. Listening to their early EPs you'd never have guessed it, but if that wave of Seattle-tinged hype brings you to *My Love Is Cool*, you won't find the tribute record you might expect.

That's not to say those influences aren't clear: *You're A Germ* has the shout-along charm of textbook Hole, while *Giant Peach* is Sleater-Kinney gone krautrock, but it's a record that's far poppier and more varied than that. There's an Ellis-Bextor Englishness to Ellie Rowsell's vocals, which go from breathy whisper to riot-grrrl scrawl. Just when you think you've got Wolf Alice sussed, they twist off in another direction.
Tom Wiggins

STUFF SAYS ★★★★☆

A Dream Outside_Gengahr

This is quite nice. It's bright and crunchy melodic indie rock with some interesting dynamics, and quavery falsetto vocals that sound like a nervous pixie asking for a pay rise. At times it recalls MGMT, but with twinkly guitars instead of lush synths... and, aside from a couple of duffers near the end, much more imaginative songcraft.
Richard Purvis

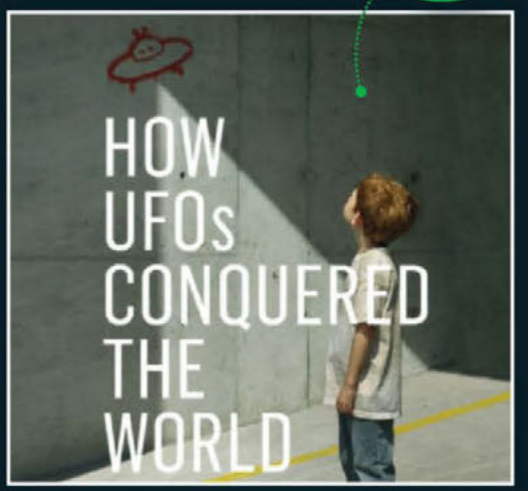
STUFF SAYS ★★★★☆

Get To Heaven_Everything Everything

Everything Everything continue to impress with their own brand of electro-flecked indie rock by packing laptop beats, frantic drumming and the unmistakable falsetto of Jonathan Higgs. You'll find yourself mumbling along to *Spring/Sun/Winter/Dread* but be careful trying to sing along with *To The Blade*.
Kyle Pittman

STUFF SAYS ★★★★☆

READ



How UFOs Conquered The World_David Clarke

Smartphone cameras haven't exactly sparked an explosion of convincing UFO videos. Could it be that flying saucers and their ilk are a 20th-century human syndrome that reflected the pop culture of their time?

That's the argument of this fascinating book by Dr Clarke, a childhood believer turned UFO journalist. Critical without belittling its many eyewitnesses, it revisits major UFO events to show how films like *Close Encounters Of The Third Kind* and the Cold War primed Western minds for the idea of being watched over by shy aliens.

It's a fine read – even for Mulder types who still want to believe.
Mark Wilson

STUFF SAYS ★★★★★

Leaving Orbit_Margaret Lazarus Dean

Dean is a NASA nerd, but in the most charming way. Her stories and enthusiasm are what give this ode to the end of the Space Shuttle programme its endearing personality. This is a history lesson with heart and wide-eyed wonder, and any space fan will appreciate its optimism for the future.
Tom Parsons

STUFF SAYS ★★★★☆

Eyes Wide Open! 100 Years Of Leica Photography_Hans-Michael Koetzle

Few brands are as iconic as Leica. This coffee-table book claims it invented fashion photography, the avant-garde, the world as we know it... Fortunately, it's also packed with great photos which say more than the words ever could.
Marc McLaren

STUFF SAYS ★★★☆☆

Media hoard

Arnie plays a human, Tame Impala plays it straight and Hitler plays to a 21st-century crowd in *Stuff*'s round-up of the best new watching, listening and reading matter

WATCH

Maggie _cinema

Terminator isn't the only dead-on-its-feet franchise that you'll find Arnold Schwarzenegger in this month – but brooding zombie horror drama *Maggie* takes that description literally.

Arnie plays Wade, a man whose daughter has been bitten but allowed home on the condition that she's quarantined for painful, drug-induced euthanasia before she starts to turn. This means the Governator must deal with his most challenging enemy yet: emotions.

The progress of the infection that turns Maggie (the excellent Abigail Breslin) into a flesh-hungry zombie is glacial compared to the instantaneous transformations seen in *28 Days Later* and the like, which gives first-time director Henry Hobson plenty of time to squeeze out all of Arnold's big, manly tears. We meet other infected neighbours, including a boy Maggie's age, and for a while the film becomes a surprisingly touching undead teen drama.

Certainly it's far from textbook Arnie – this isn't a film about fighting for survival, it's about fighting with the choices faced when a miserable death becomes inevitable for a loved one; and while the ending is something of a missed opportunity to push Schwarzenegger even further, the performances of both leads are anything but lifeless.

Tom Wiggins

STUFF SAYS ★★★★☆

It Follows _cinema, DVD, VOD

It might adhere to one of the main horror movie rules outlined in *Scream* – having sex more often than not ends in your grisly demise – but *It Follows* is anything but formulaic. Its curse stalks victims slowly but incessantly, creating an almost constant sense of helpless dread that doesn't let up until the very end.

Tom Wiggins

STUFF SAYS ★★★★☆

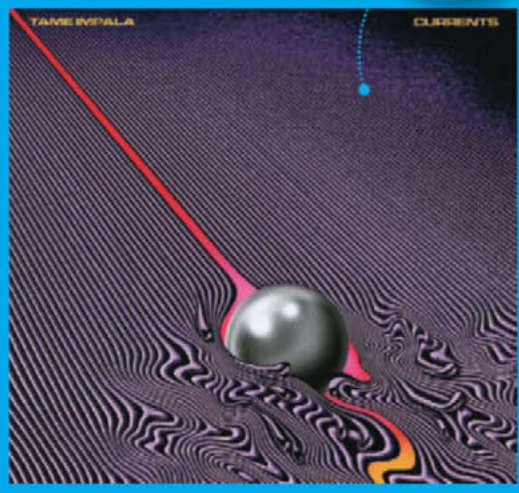
Jupiter Ascending _Blu-ray, DVD, VOD

The dialogue has all the finesse of one of those 'inspirational' Facebook posts, the plot is straight from a GCSE creative writing class and the characters are weaker than the weird voice Eddie Redmayne puts on. The one consolation is that *Jupiter Ascending* often looks stunning: a digitally polished turd.

Tom Wiggins

STUFF SAYS ★★☆☆☆

LISTEN



Currents _Tame Impala

After two albums of murky psychedelia, Aussie one-man band Kevin Parker has decided to throw his guitars on the barbie and become an '80s electro soul-pop artist. We don't know why he has done this. But while it would be easy to accuse the little fella of shooting through like a piker, the resulting record is not half as bad as it ought to be.

Single *'Cause I'm A Man* is a pretty solid indicator of where these *Currents* are leading: it still sounds like a Tame Impala record but the phasey swirls have cleared, replaced by fat retro synths.

Weirdly, those other Antipodean psych-rock freaks, Unknown Mortal Orchestra, also seem to have gone awfully pop this year. Is there some sort of dope famine down there?

Richard Purvis

STUFF SAYS ★★★☆☆

Blood _Lianne La Havas

With a Mercury Prize nomination and 'nu-soul' tag tucked into her back pocket it'd be all too easy for La Havas to head down Katie Melua's Starbucks jazz route for her second record, but *Blood* is nothing of the sort. There's a definite groove at its heart but it comes with a harder edge, particularly on *Never Get Enough* and *Grow*.

Tom Wiggins

STUFF SAYS ★★★★☆

Freedom _Refused

Sorry, this isn't another *The Shape Of Punk To Come*, but it was never going to be, was it? After 17 years they've changed a bit, but not a lot. There are still huge, groove-infected riffs and Dennis Lyxzén's angry screams, but instead of techno we get a horn section (on *War On The Palaces*) and children's voices (on *Françafrique*).

Ross Presly

STUFF SAYS ★★★★☆

READ

The Whispering Swarm _Michael Moorcock

At once an autobiography and a work of historical romantic fantasy, this book is divisive. Moorcock certainly has stories to tell of his time growing up as a writer in London, rubbing shoulders with now-famous sci-fi authors and generally kicking around the place in a '60s kind of way.

The forays into fantasy – his introduction to and swashbuckling adventures in a strange 'other London' called Alsacia – are more exciting, but told with the same straight-faced tone: "And then I had a sword fight. And then I got the girl." I found it a confusing mix, but if you're a proper Moorcock fan then you'll probably love it.

Fraser Macdonald

STUFF SAYS ★★★☆☆

Look Who's Back _Timur Vermes

Adolf Hitler was just a bowler hat away from Charlie Chaplin, so while the Führer is an infrequent subject for comedy, it's important to take the proverbial out of him every now and then. Vermes manages it splendidly as he imagines poor Adolf waking up in modern-day Berlin and struggling to be taken seriously.

Kyle Pittman

STUFF SAYS ★★★★☆

Asap Science _Mitchell Moffit & Greg Brown

Turning a YouTube channel into a book is a curiously backward way to operate, but when it addresses the really big questions – the validity of the five-second rule, the relative potency of silent guffs, why you should ask your boss for 40 winks during the day – *Asap Science* is a handy source of real-life theory.

Tom Wiggins

STUFF SAYS ★★★☆☆

Media hoard

Hello. I am *Stuff*'s eerily convincing new humanoid AI sub-editor. Here are some reviews of the latest watching, listening and reading matter. You must now read them.

WATCH

Humans _DVD

Is there anything left for science fiction to say about robots? From Asimov to *Ex Machina*, it feels as though the Uncanny Valley has already been mined to exhaustion. But while its themes might be last-gen, this smart British reboot of the Swedish drama *Real Humans* has an Apple-like ability to make well-worn ideas feel shiny and new.

Set in a 'parallel present' London, *Humans* revolves around a suburban family who draft in the services of a 'synth' called Anita (played brilliantly by Gemma Chan) to help around the house. And they're not early adopters either – humanoid helpers are everywhere, acting as robot Taskrabbits for their increasingly reliant (and unemployed) society.

Naturally, all is not quite as it seems with Anita. As we meet some of her fellow synths – including a care worker, a prostitute and two renegades on the run – it becomes clear that some of them might be a bit more sophisticated than your average Roomba.

Humans isn't the first drama to fire a warning shot about the dangers of AI. But like *Black Mirror*, its humdrum realism and fine cast show that this kind of tech, with all the 'big questions' it raises, has already taken its first steps into our homes.

Mark Wilson

STUFF SAYS ★★★★☆

Run All Night _Blu-ray, DVD, VOD

Liam Neeson's made his film again – but this time it's not called *Taken* and the people he wants to hurt really badly are American. This equitable approach to violence is to be applauded, but the "Don't mess with me" shtick is getting tiresome. We've had enough *Taken* sequels – and this is that in everything but name.

Tom Wiggins

STUFF SAYS ★★★☆☆

While We're Young _Blu-ray, DVD, VOD

Josh is 44, owns CDs and watches Netflix on his Apple TV. Jamie is 20-odd, only plays vinyl and uses a CRT TV to watch '80s horror movies on VHS. This slightly-too-stereotypical comedy of generational differences starts off well, but the gags give a little too much space to a study of authenticity.

Tom Wiggins

STUFF SAYS ★★★★☆

LISTEN

Marks To Prove It
_The Maccabees

With the lout-rock of Kasabian on one side and the earnest Mumfords on the other, *Marks To Prove It* should've cemented The Maccabees' place as heirs to the Arctic Monkeys' throne. But rather than building on *Given To The Wild*, it feels too much like more of the same.

The title track barges down the doors and barrels along like it escaped from the *GTTW* sessions but then things flatten, rising briefly for *Spit It Out* and *Something Like Happiness*. With even Glastonbury struggling for British headliners, this a missed opportunity for a band that a few years ago looked to be on the cusp of something great.
Tom Wiggins

STUFF SAYS ★★★☆☆

Another One
_Mac DeMarco

He flirts with cheese and he wears dungarees, but is there any substance behind DeMarco's kooky slacker persona? Maybe. The breakthrough album *Salad Days* had some luscious tunes but was a bit samey; this 25-minute follow-up is... well, more of the samey. And there's nothing as catchy as *Let Her Go* on this one.
Richard Purvis

STUFF SAYS ★★★☆☆

Dark Black Makeup
_Radkey

Radkey are the only all-brother band to matter since Hanson. Pretty bold statement, I know. They play punk rock with huge fuzzy riffs, groovy bass and Danzig-like vocals. The resulting sound is body-moving in every way – but the production sounds a bit muddled on record, so live is the best way to experience it.
Ross Presly

STUFF SAYS ★★★★☆

READ

How Music Got Free
_Stephen Witt

Everyone already knows how music got free. It was all Napster's fault, right? Wrong! At its core, *How Music Got Free* tells three different stories, which all come to a head at just the right/wrong time.

For a tale that deals largely in codecs and corporations (at least in the early stages) it's surprisingly witty, and at times reads like an organised crime thriller... but the Michael Corleone of this story is a nerdy factory worker from North Carolina.

For anyone who remembers Audiogalaxy and Kazaa, *How Music Got Free* manages to be simultaneously eye-opening and nostalgic.
Tom Wiggins

STUFF SAYS ★★★★★

Intercept
_Gordon Corera

The BBC's security correspondent gives a smart account of how espionage and computing grew up together, from the Enigma and Colossus machines of WW2 to the vast complexities of data processing that rule the modern world. Read it for a keener understanding of the NSA and the Edward Snowden affair.
Will Dunn

STUFF SAYS ★★★★☆

Daft Wee Stories
_Limmy

A BAFTA-winning comedy writer and prolific Viner, Brian 'Limmy' Limond has written slightly too many tales for his debut book. You get the sense that many are vaguely autobiographical; but while they can get a little formulaic, there's a decent hit-rate of genuine lolz, and fans should definitely give this a look.
Tom Wiggins

STUFF SAYS ★★★☆☆

Stuff

EVERYTHING YOU NEED TO KNOW
ABOUT THE LATEST IN TECH

instagram.com/stuffsingapore

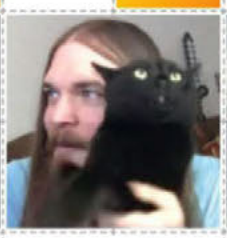
Stuff

PROJECTS

MAKE. DO. UPGRADE.

p120
BETA YOURSELF: BARBECUING
Enough with the raw sausages, people – it's time to grill properly

p122
PLAYLIST: T-SHIRT SITES
Browse our favourite online stores to get teed up for summer



p124
PLAYLIST: YOUTUBE CHANNELS
Including this cat's contribution to the world of music

p126
PLAYLIST: VIMEO SHORTS
The finest little flicks on the thinking person's video website

p128
5-MINUTE HACKS: IF NOTHING ELSE...
Beat your screen obsession, and other life fixes

BARBECUING

Are your barbecues legendary for all the wrong reasons? Richard Turner from temple-of-meat Hawksmoor is here to show you how to get the most from your grill

THE BASICS

■ **Play the long flame.** It's surprising how much heat charcoal can deliver, and a flimsy barbecue won't last long. The best barbecues are made by Grillco (grillcoinc.com) and Big Green Egg (biggreenegg.co.uk).

■ **Or build your own.** If you don't want to splash out, make a BBQ yourself. You'll need some bricks, cement, a barbecue grill set and a trowel. For full instructions go to bit.ly/brickbbq

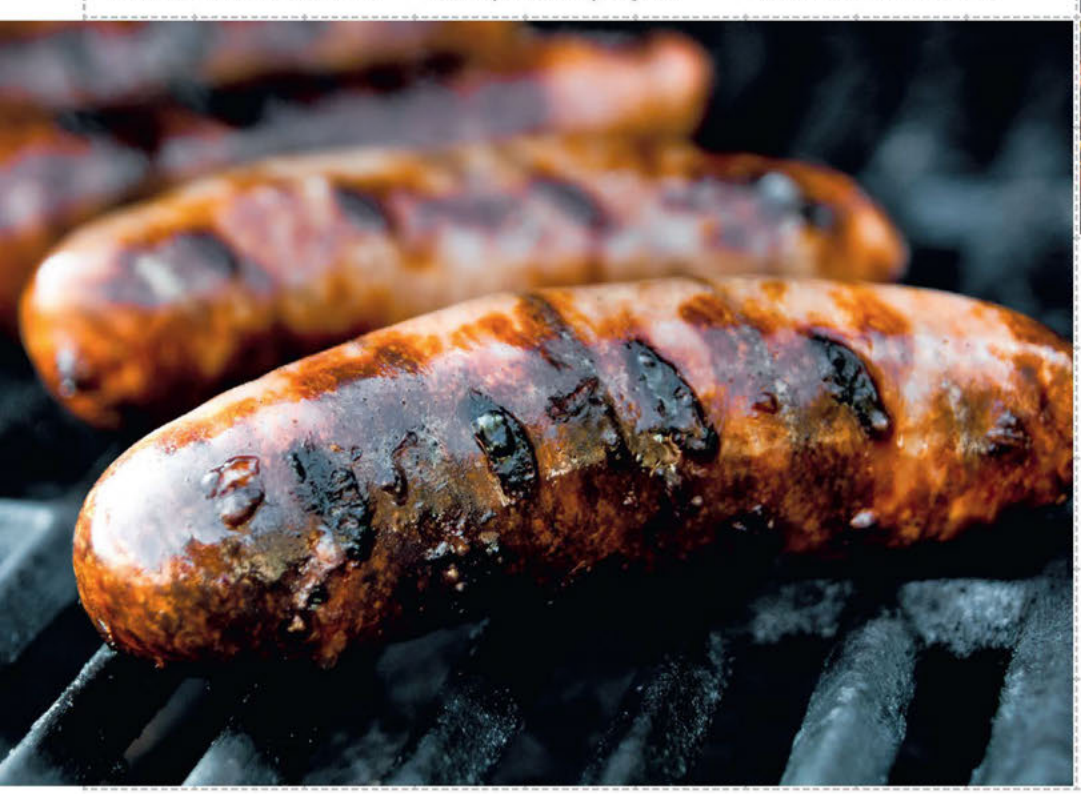
■ **Use homegrown charcoal.** Sustainable UK sources look after the environment and their

charcoal also rarely contains 'accelerators', which make your food taste like petrol. I use the London Log Company (thelondonlogcompany.blogspot.co.uk).

■ **Stay in control.** Keep a water spray on hand to help quell any flare-ups. 'Flame-grilled' might sound good, but flames are actually the enemy of good 'live fire' cooking. A temperature probe will tell you when meat is perfectly done.

■ **Use your hands.** If you can't hold your hand over the grill for more than a couple of seconds, it's too hot. Wait for it to die down to a smoulder (at least half an hour or maybe more) before starting to cook.

■ **Cook low and slow.** Tender ribs come from long cooking or smoking. Lean is not what you want for good meat cookery – fat is flavour and fat is healthy. Buy extensively farmed meat from a butcher you know and who can tell you about the animals the ribs came from.



PRE-COOK PREP

■ **Marinade is murder.** Marinades are for tenderising and masking the flavour of cheap meat. Good meat needs no marinade.

■ **Rub and season.** Pure salt and pepper is the perfect rub. If you want some extra flavour, paprika or chilli flakes are good and I'm also a big fan of fennel. Only use sugar when indirect cooking; it'll burn if used direct.

■ **Use fresh spices.** Rather than using dried spices, buy fresh ones then gently 'dry fry' them in a pan for a few minutes. Keep them moving as they toast.

ON THE GRILL

■ **Ramp it up.** Heap your charcoal on one side of the grill in a slope so you have varying degrees of heat. You can move your meat one way or the other to adjust cooking temperature.

■ **Keep it clean.** Make sure raw and cooked meat are kept separate – knives and cutting boards too. When using a probe (and you should), make sure it's sterilised between barbecues.

■ **Train hard.** Do test runs before a big event. It takes many hours of practice to become a live-fire ninja, and I still make mistakes.

COOK THIS

■ **Mix 20g Maldon sea salt,** 20g light muscovado sugar, 10g minced garlic, 10g cracked black pepper and 10 chopped sage leaves. Leave on a tray to dry.

■ **Take a free-range pork fillet.** Trim it, rub with the dried ingredients, then lay in a tray with 1cm of cure above and below. Place in the fridge for six hours, turning every two hours.

■ **Let your charcoal burn** for half an hour. Wash off the fillet then grill. When nearly cooked (internal temp 70°C), remove from the grill and rest for up to 20 minutes; slice and serve.

GIVE IT A RUB

■ **Serve with table rubs.** These are useful for seasoning after cooking as well as before. If you can't make your own table rub, I like Slap Ya Mama by Walker & Sons (from £12, amazon.co.uk).

■ **Use nature's sauce.** Herbs and natural juices are my favourite way to serve grilled meats. Try salsa verde rather than barbecue sauce, which can overwhelm good meat.

■ **Finish on a sharp note.** One final way to add piquancy is to use flavoured vinegars, or even just a good cider vinegar.

LEVEL UP WITH...

THE BOOK
HOG
$55 / octopusbooks.co.uk
An encyclopaedic guide to all things pig, this book from Richard H Turner contains over 150 pork recipes, including many aimed at those with a shiny new barbecue to test-drive. It covers every cut from the snout to the squeak, and it even reveals how to make Candied Bacon Pecan Popcorn. Which is surely the best movie snack imaginable.

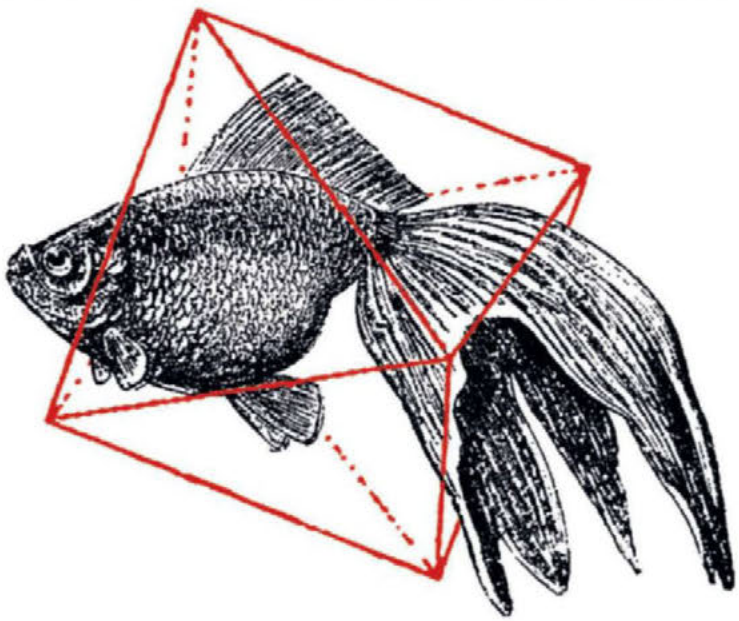
THE YOUTUBE CHANNEL
DJ BBQ
youtube.com/raduk8
Not to be confused with Ray 'Dr BBQ' Lampe, a recent inductee into the Barbecue Hall of Fame (yes, that exists), DJ BBQ is a man with scarcely believable enthusiasm for barbecuing. He shares his wisdom on Jamie Oliver's FoodTube and here via a mouthwatering new recipe every Friday.

THE FESTIVAL
MEATOPIA
19-20 September / meatopia.co.uk
'Meat, drink, fire, music' is the tantalising tagline of this festival of fire-cooked treats. Held at Tobacco Dock in London, its 'manifesto' promises ethically-sourced meat, artisan ales, butchery demos and live music. Rumours suggest headliners this year will include Porking Heads, Terence Trent Barbie and Half Man Half Brisket.

PLAYLIST

T-SHIRT SITES

Why submit to the nightmare of going shopping in the physical world when all the smartest, most original T-shirts are to be found in digispace?



Artokingo
Featuring some of the best artist-designed T-shirts on the net, Artokingo differs from crowd-powered stores like Threadless by only listing its favourite designs. These tend to be animal-themed, such as the lovely 'Fish in Geometrics' design by Florent Bodart to your right.
artokingo.co.uk

Photo.Clothing
We expect our photos to be printed all the way to the edge, so why not our T-shirts too? This place delivers striking photographic prints that cover entire shirts, sleeves included. Got to be better than a 'vintage' logo advertising a Californian crab shack that doesn't even exist, hasn't it?
photo.clothing

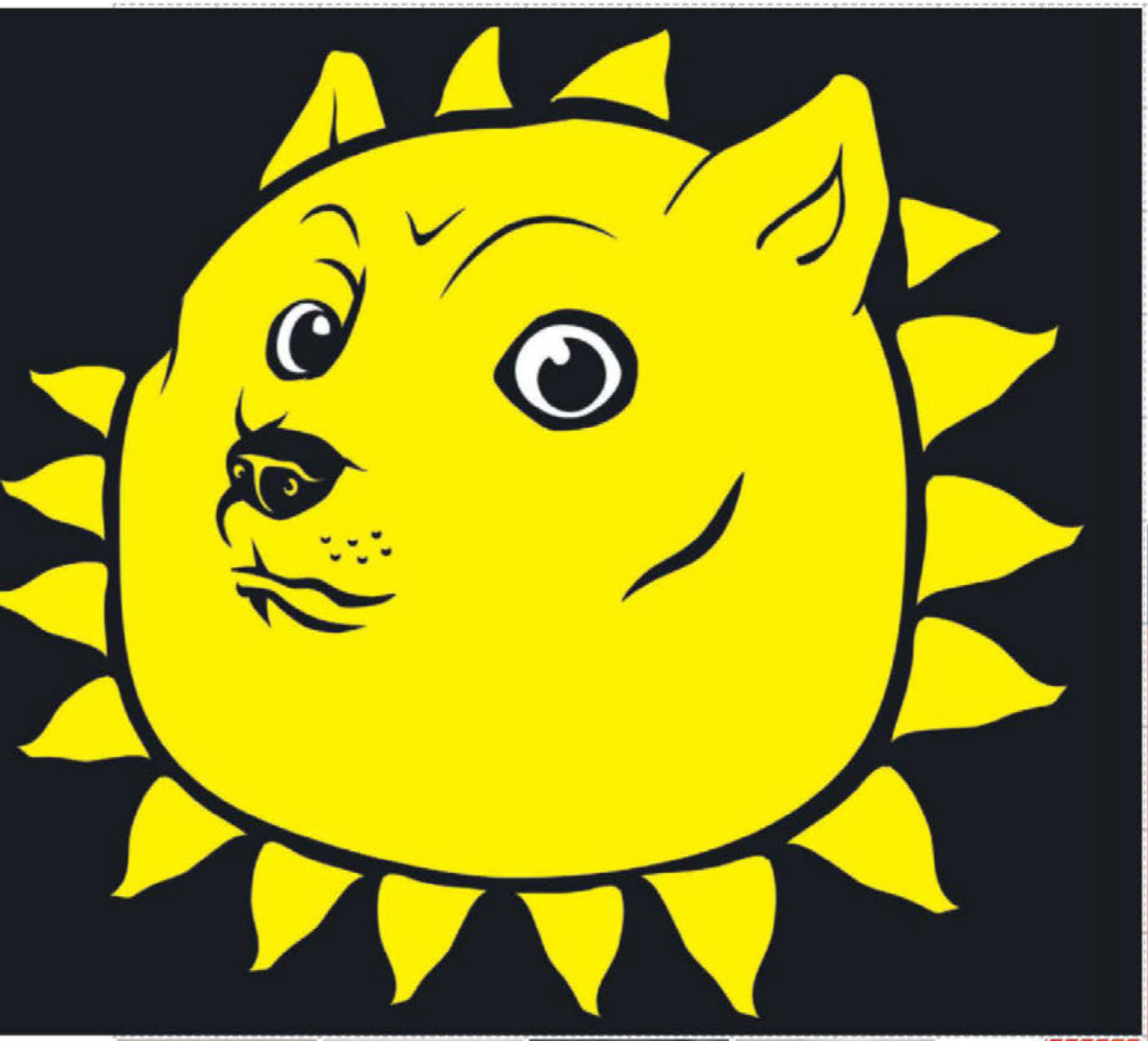
North East
For a touch of modernist Japanese minimalism, North East collaborates with international designers to offer bold prints with a geometric edge. All on plain white or plain black fabric, they're perfect for making a statement without actually having to say anything.
northeast.jp

Threadless
A long-standing option for smart T-shirts, Threadless takes submissions from illustrators across the world and prints the ones that get the most upvotes. Because it's in the US you'll have to pay for shipping, so it's worth buying in bulk or seeing if the shirt you want is on other sites
threadless.com

Worn Free
For maximum rock'n'roll cred, these licensed shirts pay homage to well-loved bands and musicians from Miles Davis to Debbie Harry. There are also designs worn by rock idols, so you can mimic their style. Of course, whether you do that sincerely or ironically is entirely up to you.
wornfree.co.uk

Insert Coin
If you like to be identifiable as a game geek, but only to other game geeks, head to this arcade of gaming-related clothing. From *Assassin's Creed* to *Metal Gear Solid* and beyond, it offers T-shirts and other ephemera that reference classic games without shouting about it.
insertcoinclothing.com

6dollarshirts
As you might expect, this site offers six-dollar T-shirts (though you'll pay a bit extra once delivery and import duty are added). It's home to a cornucopia of different T-shirt genres including one-line gags, film references and internet memes. Much good looks. So trend. Do want.
6dollarshirts.com



Dumptackle

Rugby fan? It could be worth popping here to get yourself some new threads in time for the World Cup in September. With loads of rugby-referencing designs ranging from the casual nod to hardcore fandom, there should be something to fit your level of zeal as well as your beer gut.
dumptackle.com

T-Lab

Not the Tetley's R&D centre, but the online home of motoring-related threads. Some of the most subtle offerings are the best – the one pictured refers to the high-speed bend at the end of the back straight at Suzuka. If you've got a favourite track, event or car, come here and get it on your chest.
t-lab.eu

Last Exit To Nowhere

It's always better if you can lead your audience to the point without spelling it out. Each of Last Exit To Nowhere's offerings features a beautifully obscure reference to a classic film that will only be appreciated by people who don't talk until the credits are rolling.
lastexittonowhere.com

Whitstable T-Shirt Company

While a close-fitting outfit with familiar logos will quickly alert people to a 'serious' cyclist on the road, suitable off-bike apparel can be harder to come by. This comfy casualwear brand helps *rouleurs* show their colours with subtle pride.
whitstabletshirt company.co.uk

HOW TO... BE A T-SHIRT DESIGNER

SPREADSHIRT

spreadshirt.co.uk

Upload your own designs to this T-shirt store and it'll put them on its virtual racks for other people to peruse and buy. Here's how to do it:

1 **Choose your design.** Already got one ready to go? Just pick your T-shirt style and upload the image to Spreadshirt's 'Create' section. If you're more of a wordsmith, try a less involved design using its text box.

2 **If you're going the** graphical route, bold designs with a limited colour palette are a good choice, so crack out your best software – Adobe Illustrator (from £8/month, creative.adobe.com) is ideal – and get to it.

3 **Upload your design,** set your price and start promoting your new range of apparel. But be warned: if you can't persuade any of your friends to buy it by filling their Facebook news feeds with links to your shop, T-shirt design may not be your new career. Good luck!

PLAYLIST

YOUTUBE CHANNELS

We all know that, when visiting the world's greatest video site, the quality is quite variable. But some feeds manage to always keep the standard high. Here are 11 of the best...

Vsauce

Vsauce tackles both serious and irreverent scientific and philosophical questions in cheerful and engaging ways. 'What if everyone jumped at once?', 'Will we ever run out of music?' and 'Why don't we taxidermise humans?' are answered with the kind of detail usually reserved for more pressing issues.

Ashens

British vlogger Ashens' channel is a mix of unboxings, tech and comedy, but the real gems are where he tries out fake games consoles, knock-off phones or out-of-date and possibly lethal foodstuffs. Ashens tries the worst things in life so you don't have to, somehow keeping his sense of humour as he goes.

CinemaSins

You may think you're a cinematic pedant... but you're not as bad as these guys, who tear apart films one inconsistency or cliché at a time, with a helpful counter in the top left corner. With over 16 million views, the most popular film to see criticised is *Frozen*, though at only 96 movie sins it isn't the worst offender.

TestTube News

TestTube examines current geopolitical trends with historical and sociological explanations. That may sound dull, but somehow it isn't – and it's certainly a good way of getting your head around topics. You can also impress people during discussions on the roots of IS or the size of the Greek debt.

League Of Super Critics

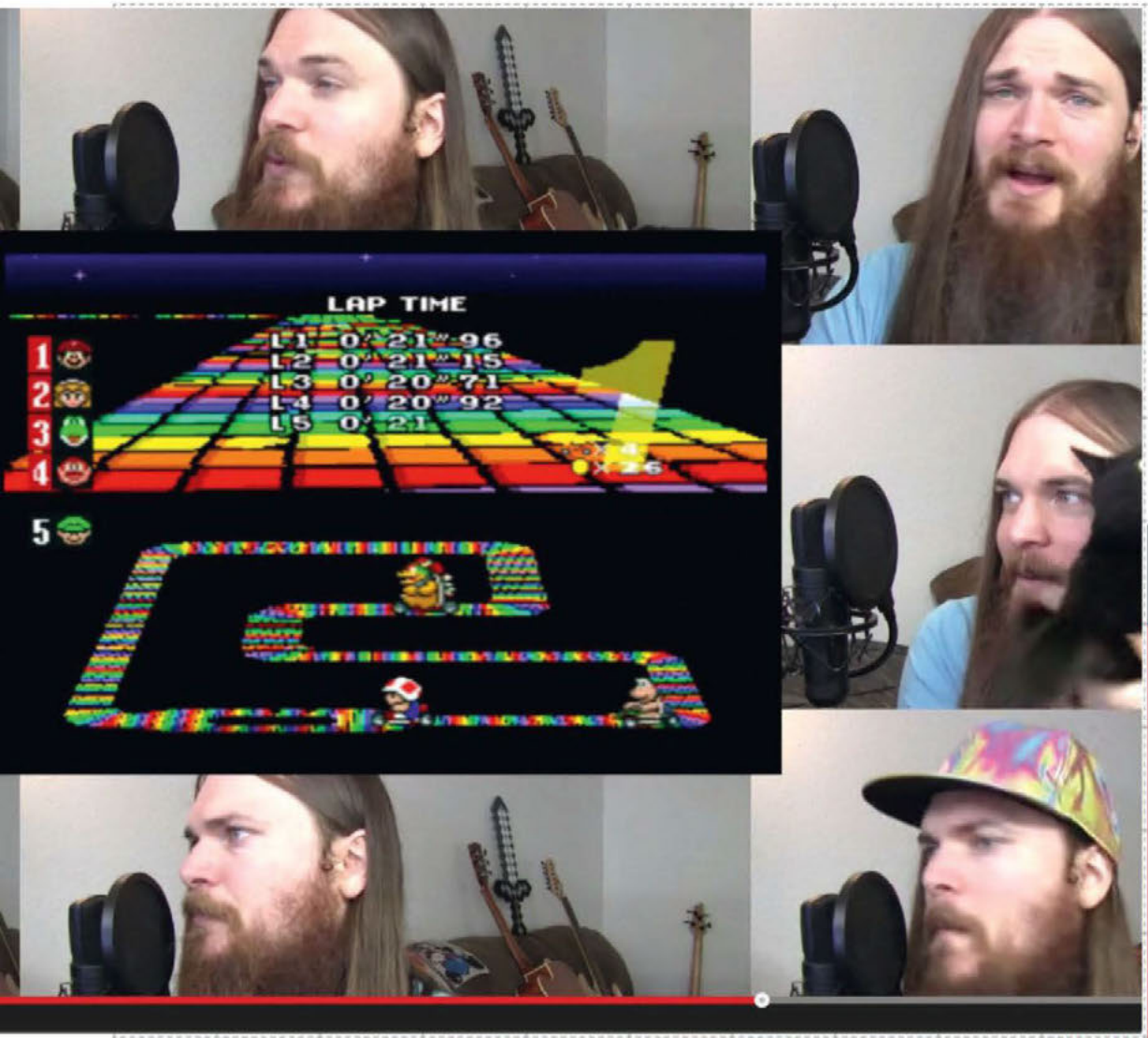
A different critic for each day of the week casts an eye over the tricky world of pop culture. Our pick is Todd In The Shadows' surprisingly in-depth One Hit Wonderland, where fly-by-night music acts have their careers painstakingly picked over. Who knew there was more to Sir Mix-A-Lot than first meets the eye?

SmarterEveryDay

Destin Sandlin is a missile test engineer by day, but you don't have to be a rocket boffin to follow the science here. With judicious use of slow-mo footage and replays, and a solid understanding of physics and chemistry, Sandlin patiently answers questions like 'How does a cat always land on its feet?'

Smooth McGroove

Do you have enough videogame *a capella* in your life? The answer is either 'no' or a total lie. Smooth McGroove covers gaming music, doing every layer himself, accompanied by in-game footage and multiple versions of his bearded face performing each segment, with occasional cameos from his cat.



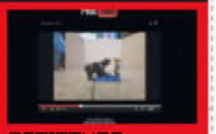
Epic Rap Battles From History (ERB)
The idea is simple, yet genius: Get two historical titans to argue their legacy in a rap battle. Smooth production and well-researched smackdowns make each battle very compelling viewing. Match-ups range from Shakespeare vs Doctor Seuss to Beethoven vs Justin Bieber.

ZeFrank
If you like knowledge paired with humour and flippancy, then ZeFrank is the man for you. His animal 'true facts' series is both informative and hilarious. Figuring out which bits are true and which are jokes is all part of the fun. ZeFrank has given TED Talks about the internet and online comedy – he really knows his stuff.

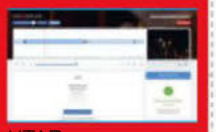
Mental Floss
The video channel of American fact and trivia magazine *Mental Floss* doesn't disappoint. Our pick is the 'Big Questions' – where else are you going to find out why humans have no mating season, how decaffeinated coffee is made and the origin of the high five? Well, Google, we guess, but it won't be half as entertaining.

Deep Look
Examining big scientific concepts by starting off very small, Deep Look explores some of nature's unusual critters and what we can learn from them. Hummingbirds in windtunnels, newt canoodling and the sea otter's fur coat... all uploaded in incredible 4K to reproduce details in stunning quality.

NEW TUBE TOOLS FOR DISCOVERY



PETITTUBE
Everyone knows viral videos that got millions of hits, but spare a thought for the little guy. PetitTube shows you a random video that's never been watched. Will it be great? No – but it's fascinating all the same.
petittube.com



UTAB
Want to know the chords for something playing on YouTube? Utab will try to help. Its clever algorithm will listen to the music for 20 seconds and then pull in play-along tabs and even lyrics if it finds them.
utab.com

YTTM
Feeling nostalgic? YTTM pulls video from the year of your choice, going all the way back to 1860 with one claiming to be the 'first sound ever recorded'. You can even filter by type for sports, games or even adverts.
yttm.tv

PLAYLIST

VIMEO SHORTS

YouTube's all well and good if you want to watch kittens on Roombas, but real film buffs go for Vimeo. Here are its finest short films – and all but three of them are free to view

Logorama

This film is set in a world where every person, animal, plant, building, vehicle and even geographical feature is built out of corporate logos. Mr Pringle flirts with the Esso girl, Michelin Man cops pursue a Joker-esque Ronald McDonald, and the Haribo Kid visits a zoo populated with Lacoste crocodiles and Linux penguins.

The Black Hole

A sleep-deprived office drone discovers a magical portal that lets him pass through solid surfaces – and is quickly undone by his greed. The winner of the 2008 Virgin Media Shorts competition, *The Black Hole* is a textbook example of short-form comedy. It delivers suspense, setup and punchline in just two minutes. Bite-sized brilliance.

Pixels

Inspired by 8-bit video games and '80s comedies like *Who Framed Roger Rabbit*, director Patrick Jean's high-concept short pits New Yorkers against pixelated invaders from vintage arcade games, rendered in all their blocky glory. A *Ghostbusters*-style adaptation starring Adam Sandler is coming.

The Landing

Set in the early '60s in the heartland of America, this short draws heavily on Cold War paranoia and fears of UFO landings. The mood is oppressive; a young boy's fantasies of rocketships and alien invaders are brutally squashed by his alcoholic father. And then something falls from the sky... To say more would spoil it.

Sight

This short should give pause to anyone who's excited by Microsoft HoloLens. It's a vision of an AR dreamworld; computer-generated artwork hangs on blank walls, people use apps in all basic interactions and gamification has got out of hand. *Sight* shows a future we could be unwittingly stepping into.

World Of Tomorrow

US$4($5.5)

Oscar-winning animator Don Hertzfeldt takes his first foray into all-digital animation. It features a little girl, Emily, and her guide, a time-travelling third-generation clone. It's touching, thought-provoking and funny, cramming in ideas at the rate of Terry Pratchett or Douglas Adams.

Kung Fury

US$5($6.85)

From the school of parody that brought you *Far Cry 3: Blood Dragon* and *Vice City* comes this riff on '80s action films, packed with every cliché you'd expect. The titular hero's a maverick cop with Kung Fu powers and a Lamborghini; villains are gangs of *Warriors*-esque thugs and, yes, Nazis.

[**Words** Stephen Graves]

Alive In Joburg
In faux-documentary wobbly hand-held style, this gritty sci-fi film examines the aftermath of an alien landing in Johannesburg; the extraterrestrial refugees are quickly isolated in ghettos, unable to get home. Does that sound a bit familiar? Director Neill Blomkamp used this short as the basis for his feature, *District 9*.

Elgin Park
Photographer Michael Paul Smith has won legions of fans for his snapshots of mid-20th-century American towns created using meticulously detailed miniatures and clever optical illusions. But as this documentary shows, this isn't just a slice of retro whimsy; it's intimately tied in with Smith's personal identity and history.

The Phone Call
US$3($4.11)
A crisis helpline worker takes a call from a suicidal man in this Oscar-winning short anchored by powerful performances from Sally Hawkins and Jim Broadbent. It's a testament to what you can do with a simple premise and a pair of fine actors – one of whom delivers his performance entirely as a voiceover.

Truth In Journalism
The latest part of Adi Shankar's 'Bootleg Universe' enlists *True Blood* star Ryan Kwanten for a gritty black-and-white homage to *Man Bites Dog*. Like the film that inspired it, it features a crew of filmmakers following shady photojournalist Eddie. But this tour of New York quickly veers off into marvellously unexpected territory.

HOW TO... GET SHORTY

Fancy making your own short film? A smartphone and these nifty accessories are all you need...

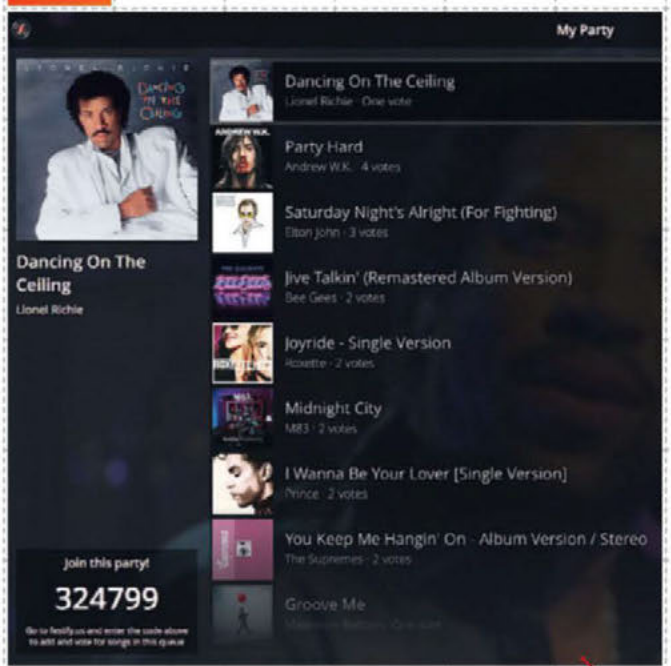
FILMIC PRO
This year's Sundance Film Festival showcased *Tangerine*, shot on an iPhone 5S using this app. It gives you full control over focus, aperture and colour temperature. Android fans should see the similar Cinema FV-5.
$9.98 / iOS

MOONDOG LABS ANAMORPHIC ADAPTER
This clip-on adaptor lets you shoot video with a 33% wider horizontal field of view on your iPhone and adds flares and cinematic distortion.
from US$160($220) / moondoglabs.com

SHOULDERPOD S1 SMARTPHONE GRIP
This will hold any phone up to 93mm wide, adding a universal mount that will let you plant it on a sliding dolly, a tripod or even a steadicam rig: perfect for giving your film a professional gloss.
$45 /Red Dot Photo

5-MINUTE HACKS

IF NOTHING ELSE, AT LEAST...



1

1 DEMOCRATISE YOUR PARTY PLAYLIST

Clearly you have the best musical taste of anyone at your party, but what if your guests don't agree? You let them vote for the next song...

Download Festify (Sfree, Windows and Mac) from festify.com. Enter your Spotify Premium username and click 'start new party'.

Now open the browser on your phone and type 'festify.us'. Enter your six-digit code and join the party. You can now add songs, and your guests can vote for them.

If it's all gone a bit Mumford and you want to reassert control of your party, go to settings, click 'show password' and enter this in the 'enter admin mode' section. You'll now be able to skip, delete and pause tracks.

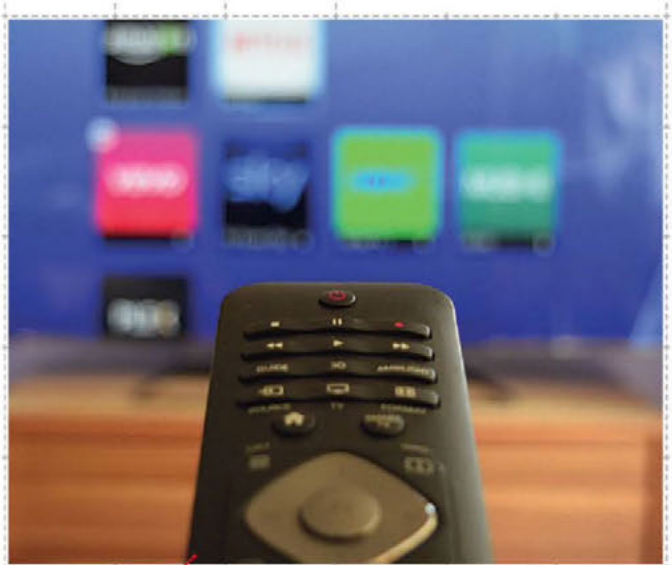
2 CONTROL YOUR PS4 WITH YOUR TV REMOTE

All you want to do is watch Netflix, but your PS4 controller has naturally run out of juice or gone AWOL. Here's how to use your telly remote instead:

You need to enable HDMI-CEC on your TV. This has a different brand name depending on the manufacturer. For example, Samsung calls it Anynet+ and Philips calls it Easylink.

Once you've found out your HDMI-CEC equivalent, enable it in your TV's settings and in the PS4's ('Settings' > 'System' > 'Enable HDMI Device Link').

You'll now be able to use your TV remote's directional pad to browse your Netflix queue. If you're watching telly, a press of your controller's 'PS' button will now also take you straight to your PS4.



2

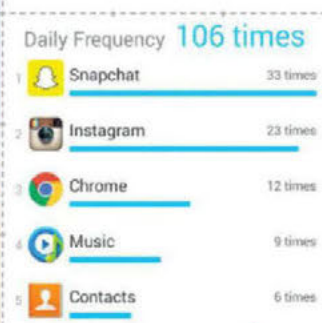
3 GO ON A SMARTPHONE DIET

You and your Android phone are best buddies, but sometimes you need to know when to unplug and maintain your other tech friendships. Let's introduce some QualityTime:

Download QualityTime (Sfree, Android). On its own this app will give you breakdowns of how long you're spending in each app, brutally exposing the extent of your Trivia Crack addiction.

Now go to ifttt.com/qualitytime and activate the QualityTime channel. This will give you access to various recipes, such as logging excessive smartphone binges on a Google Spreadsheet or Calendar.

To treat hardcore addiction set up a trigger, such as a notification when you exceed your daily time ration.



3

4 FIND DIY RETRO GAMING HEAVEN

It's not all about frame rates, floating points and pixel-packed resolutions, y'know. The old gaming classics have a charm that'll never die, and Lakka OS (£free, lakka.tv) is the portal to nostalgia nirvana.

Download Lakka and follow the instructions. We recommend booting from USB, unless you've got a spare PC or Raspberry Pi you want to dedicate to retro gaming.

Load up any ROMs that you own, which can range from the PlayStation and SNES to the Atari Jaguar, and pretty much every retro console in between.

Plug in your controller and you're off! Lakka works with PS3, PS4, Xbox 360 and Xbox One controllers. Less time faffing around, and more time to relive your favourites.

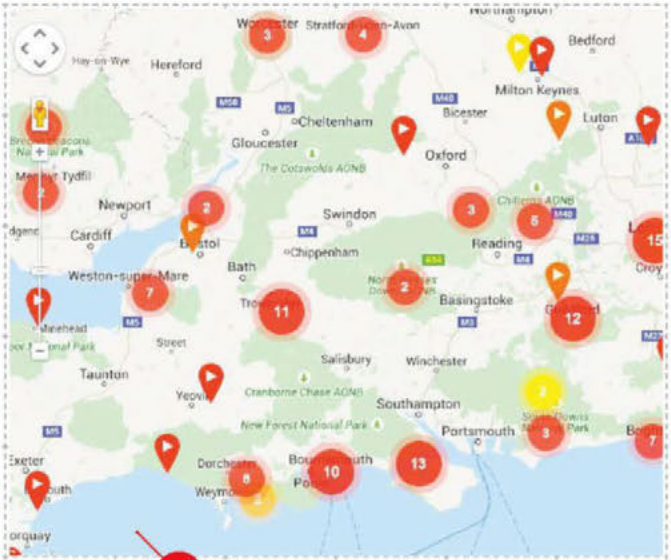
5 GET A GUIDED DRONE TOUR

You could use Street View to get a sneak peak of your holiday destination – or you could go one better and get a dramatic bird's-eye tour using this 'DroneTube' video map:

Go to travelbydrone.com and search by the location you'd like to fly over, or lose several hours by clicking on random videos of Eastern European cities and checking flight prices on Kayak.

Looking for a different kind of wedding photographer? Click on the 'pilots' tab to see a map of commercial drone pilots based on their location, together with their contact details to request a fly-by bridal shoot.

To watch some of the world's finest drone-ography, go to the 'Best of 2015' tab and see spooky Chernobyl and volcanic Iceland in full-screen glory.



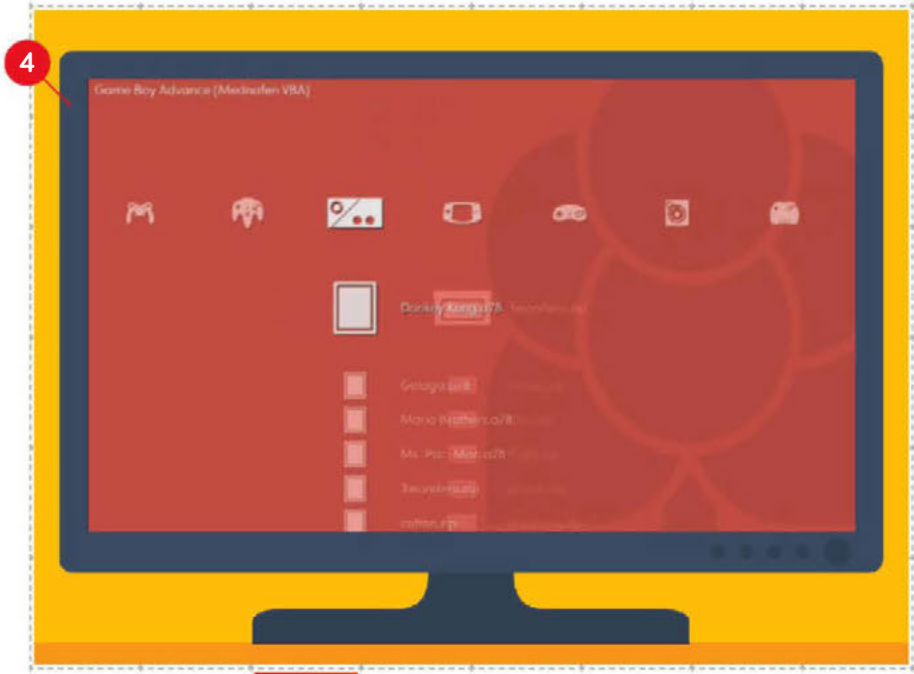
6 PLAY HANGMAN IN ANY APP

Well, in any messaging app, at least – install this custom iOS keyboard and you'll be embroiled in more letter-themed chats than Rachel Riley:

Download HangKeys (Sfree, iOS). Though it's an iPhone app, your friend won't need HangKeys to play – it's purely text-based, and your game will appear in your chosen messaging app.

Open Settings. Now select 'General', then 'Keyboard' and finally 'Add new keyboard'. Select HangKeys and then open your preferred messaging app, whether that's Facebook Messenger, WhatsApp or SMS.

To play, press and hold the globe icon on the iOS keyboard. Choose HangKeys and start your game. Feeling evil? Start with some tricky Hangman classics: 'jazz', 'faff' or 'axiom'.



DRONE TOURISM

Don't tell me! I know this. Drøne must be a town in... Norway?
Surely it would be the capital of the UAV? While geography jokes might well be the highest form of wit, this is no time to gad about. We're talking here about the future of holiday travel. A future where you strap on a VR headset, choose a destination, then soar over it in real time like an airborne Judith Chalmers. A video feed gives you a bird's-eye view of a castle, while you look down your beak at the miserable easyJet hordes below. First Class is now your lovely, comfy sofa.

Sounds romantic. I suppose you follow it up with a candlelit dinner over Skype?
That's not a bad idea. It'd halve the washing up for a start. But no, this isn't intended to replace honeymoon trips to Florence. Researchers from the University of Vienna and tourism start-up InformAmuse see it as an aid for those who can't travel, whether for reasons of injury, disability or cost. They've already prototyped a system for remote-controlling drones via a VR headset. And as they rightly point out, livestreamed virtual tours are a lot more earth-friendly than CO_2-spewing jets.

All sounds a bit DJI in the sky to me...
A fine pun, but it seems you've failed to read about travelbydrone.com on p113. The basic concept is already here, albeit in pre-recorded, 2D form. This project's lead says he's only a year away from a public version that could see you flying over Sicily's Valley of the Temples from a pub in Temple Valley, Hampshire. There are issues to overcome, not least the restrictive no-fly zones over many of the world's biggest tourist sites. But if life's taught us anything, it's that cool technology always finds a way. Now, where's that Google Cardboard clone?

[**Words** Mark Wilson]

DON'T MISS THE NEXT ISSUE! ON SALE IN NOV

Pioneer

Direct Energy HD AMP · Surround Modes · Virtual Speakers · Auto Phase Control Plus · Hi-bit 24 Processing · 3D Compatible · HDCP2.2 · 4K/60p Ultra HD Upscaling · 4K/60p Ultra HD Pass-through · Internet Radio · iControlAV5 · AVNavigator · ECO Mode · Network Standby

SABRE DAC · Made for iPod iPhone · Bluetooth · Wi Fi · DOLBY ATMOS · DOLBY TRUEHD · dts-hd Master Audio · HDMI 7in/2out · MHL · dlna · vTuner · Spotify · HEOS · ARC

LX SERIES

Now powered by DOLBY ATMOS

SC-LX88 SRP: $3499 w/gst — Max. Power: 260w x 9ch (Class D)

9.2 Channel 4K60p Hi-End Network AV Receiver

SC-LX78 SRP: $2999 w/gst — Max. Power: 250w x 9ch (Class D)

9.2 Channel 4K60p Hi-End Network AV Receiver

SC-LX58 SRP: $1999 w/gst — Max. Power: 240w x 9ch (Class D)

9.2 Channel 4K60p Hi-End Network AV Receiver

Available at Audio House (Liang Court), Alpha Audio (Sim Lim Square), Best Denki (IMM), Courts (Megastore)

Pioneer Electronics AsiaCentre Pte Ltd | 253, Alexandra Road #04-01, Lobby 1, Singapore 159936. Tel: 6472 1111

www.pioneer.com.sg

LG
Life's Good

OLED TV

ONLY PERFECT BLACK MAKES PERFECT COLOR

Lee Min Ho
LG Ambassador

EG960T

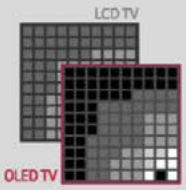
Beyond LED,
The era of **OLED TV** begins, Now

4K ULTRA HD webOS 3.0 4K 3D ULTRA HD Sound Designed by harman/kardon

5 REASONS THAT MAKE OLED TV THE PERFECT CHOICE

❶ Perfect Black

200x DEEPER BLACK

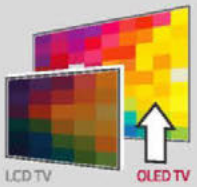


❷ Perfect Color

PERFECT BLACK CREATES **PERFECT COLOR**

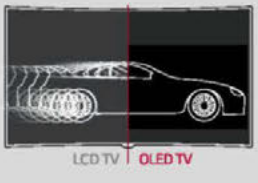
❸ Perfect Viewing Angle

12x MORE ACCURATE COLOR



❹ Clear Motion

1000x FASTER RESPONSE TIME



❺ Perfect Curve

THE PERFECT **CURVED TV**

www.lg.com/sg